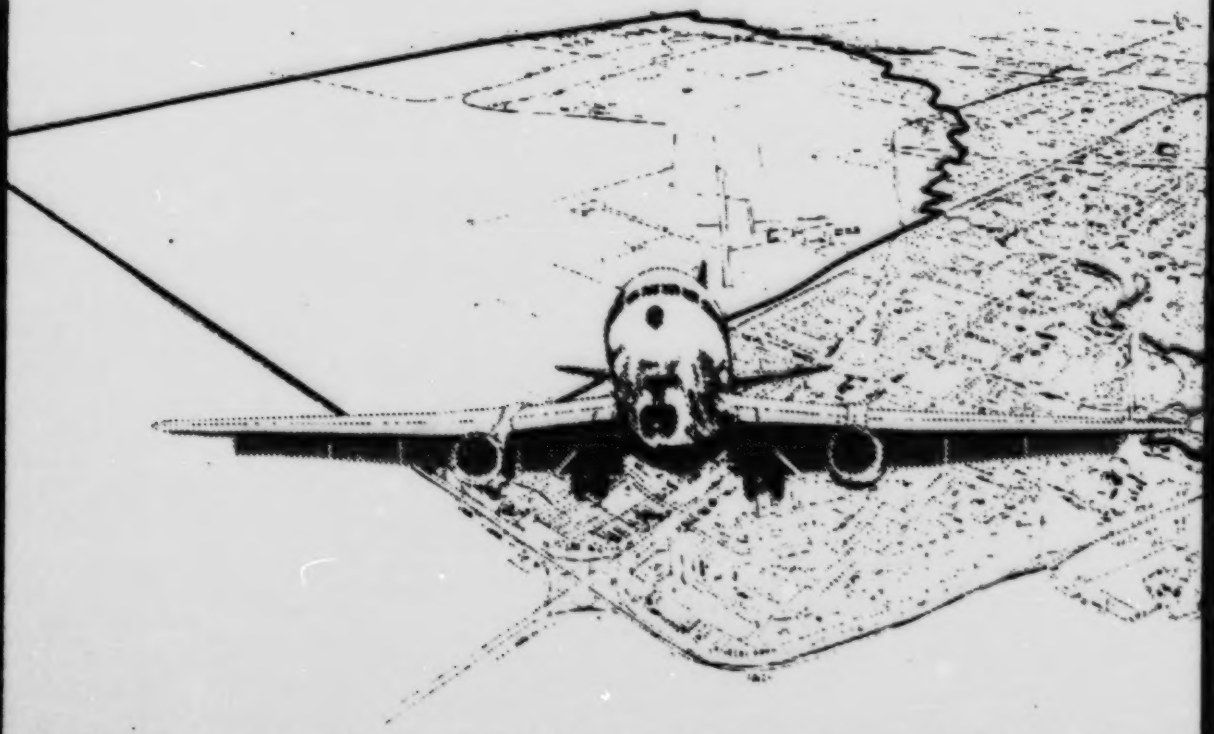
SOUTHWEST SECTOR

FEASIBILITY STUDY



CITY OF REGINA URBAN PLANNING DEPARTMENT

Title: Southwest Sector Feasibility Study

Author: City of Regina Urban Planning Department
Date First Published:
Date of Last Revision:

Additional copies available from: The City of Regina
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Comments: This is a draft report for presentation to the Regina Planning Commission.

5213D

SOUTHWEST SECTOR FEASIBILITY STUDY

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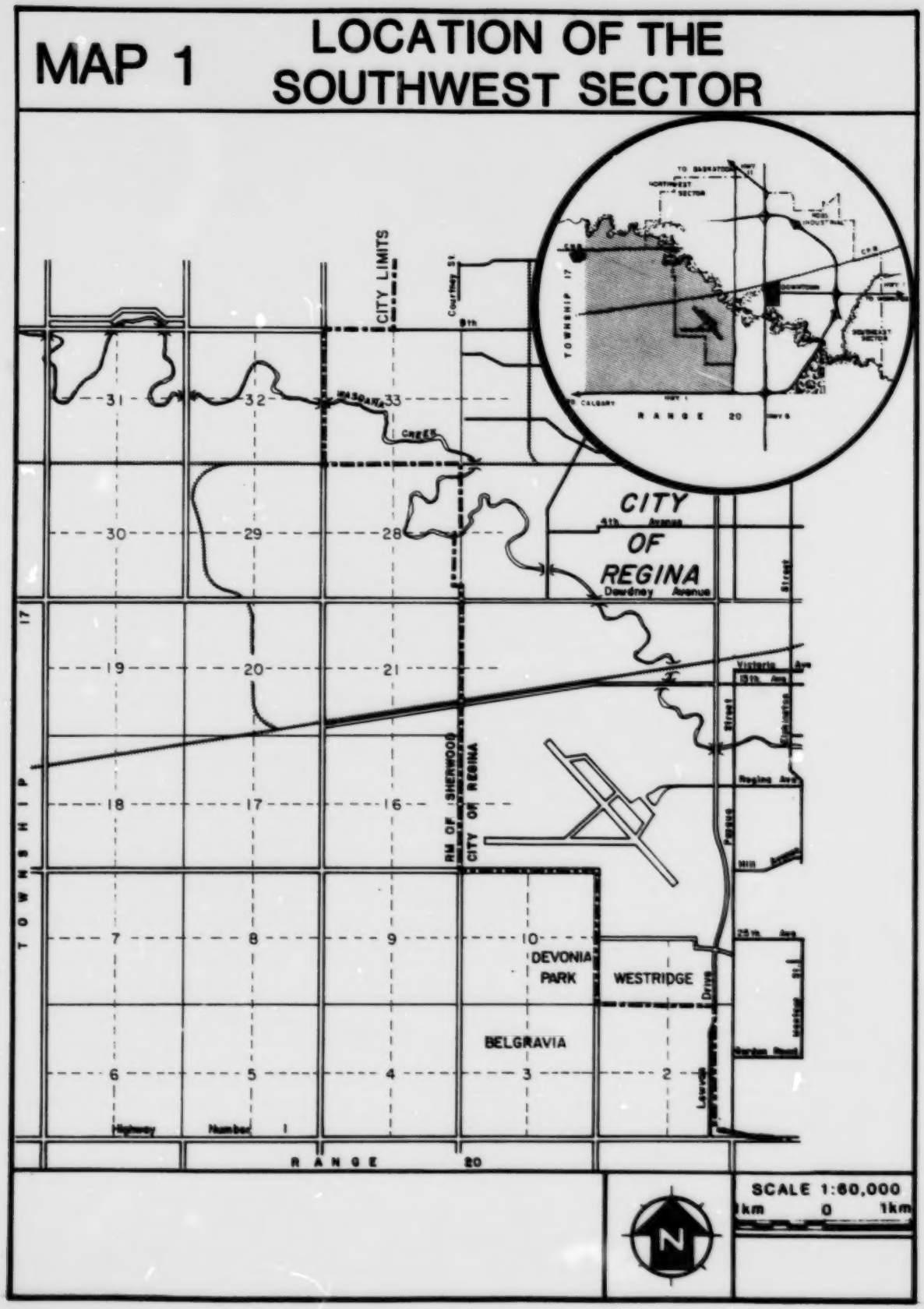
SECTION 1

INTRODUCTION

MAP 1 LOCATION OF THE SOUTHWEST SECTOR



1.0 INTRODUCTION

1.1 Purpose

The purpose of this study is to determine, in light of the release last year of Transport Canada's Airport Master Plan:

a) The physical potential for future development of the Southwest Sector.

b) The types of development which can be accommodated in the sector.

c) The impact of development in the Southwest Sector on the overall growth management of the city; and,

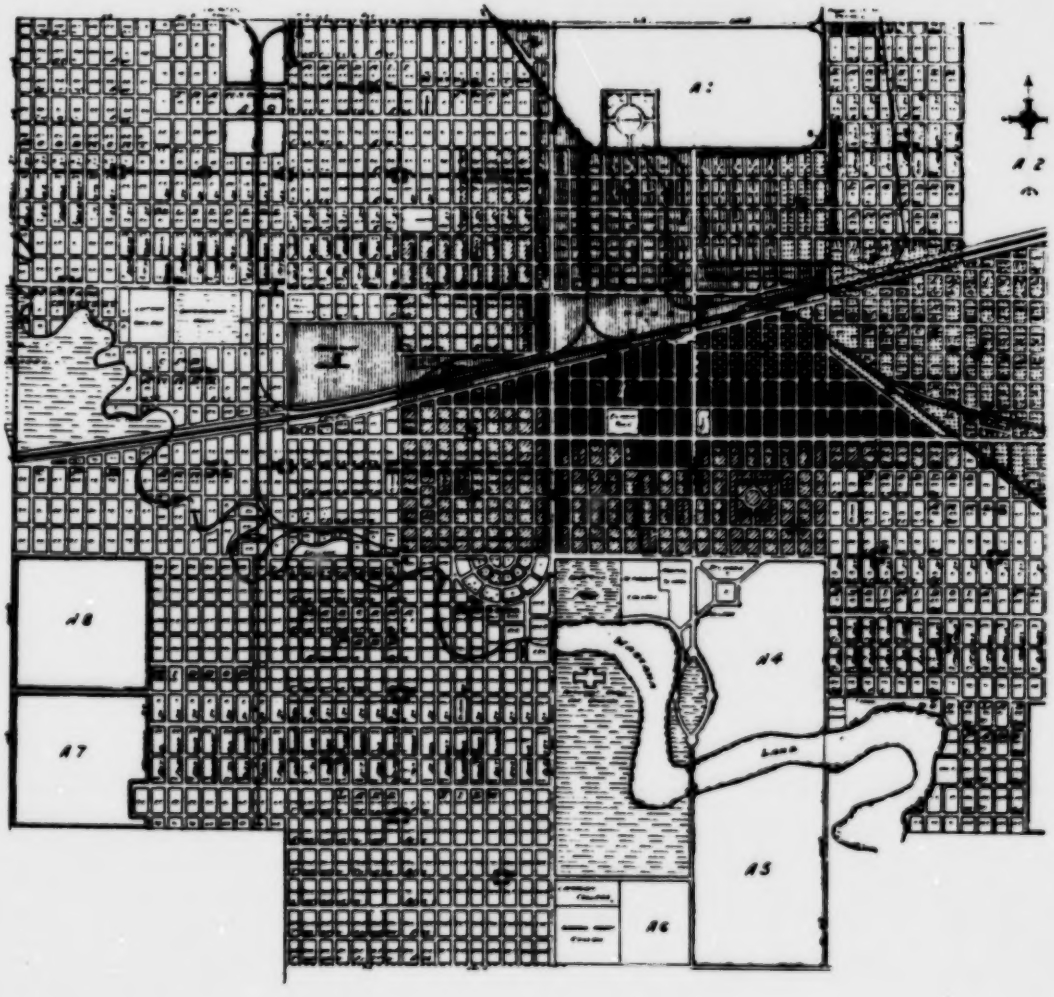
d) The short term development options, if any, which are compatible with the long term development potential of the area.

1.2 Study Area

For the purposes of this study, the Southwest Sector is defined as that portion of the City of Regina lying south of Wascana Creek and west of Lewvan Drive and that portion of the R.M. of Sherwood lying within Township 17, Range, 20, all of which are as shown on Map 1.

The study area is approximately 6200 ha (15,300 acres) in size, which can be compared to the current area of Regina which is 11,000 ha (27,180 acres).

MAP 2 MAWSON PLAN – 1927



1.3 Background

1.3.1 History

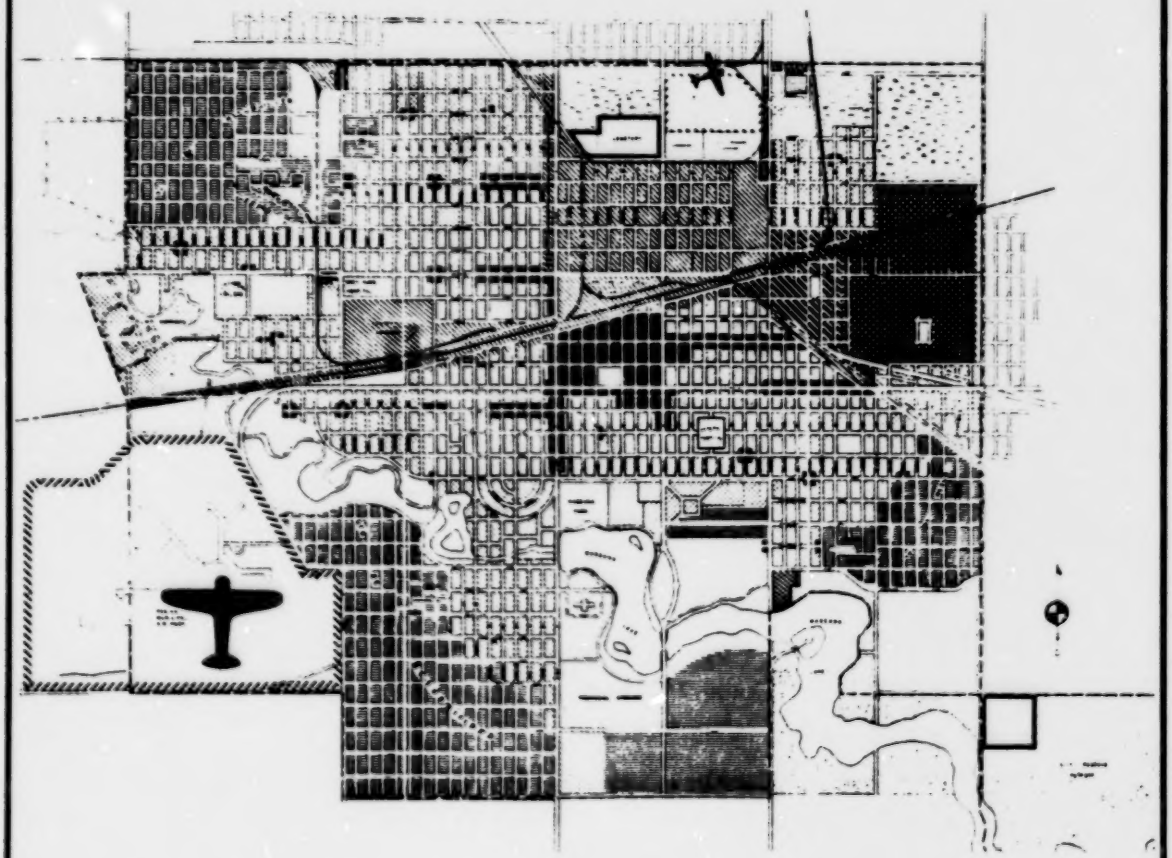
Portions of the southwest sector have been included in several development plans and subdivision applications in the past. The earliest plan for the development of Regina was prepared by Thomas Mawson in 1927 (see map 2). It showed the portion of the southwest sector which extends past Courtney Street to the west and to the present day alignment of Gordon Road to the south as a primarily residential district. Lands in the area were subdivided into twenty-five foot lots on the gridiron street pattern which was prevalent at that time. The Devonian Park and Belgravia Subdivisions are the products of these early plans (see map 1).

Unanticipated by Mawson, however, was the rise of air transportation in the decades which followed, and the need for aviation facilities. The original quarter section site of the Regina Airport was purchased in 1927 by the Regina Flying Club and was subsequently sold to the City of Regina. Since World War II the airport has been operated by Transport Canada (previously the Canadian Department of Transport) and the site was purchased from the City by the Federal Government in 1972 for approximately $2.3 million.

In the post war period, aviation growth has been highlighted by the introduction of jet aircraft, which necessitated expansion of the airport and rendered large areas of the abutting lands inappropriate for residential development due to noise impacts. The thirty year programme for development which was prepared by E.G. Faludi in 1947 provided for substantial lands to be set aside for airport expansion and called for the development of a commercial airport north of the city to accommodate non-scheduled flights and air freight (see map 3).

In the mid '50's two annexations were undertaken to accommodate expansion of the airport runways, but at the same time residential development proceeded in the south end of the city in some of the areas most profoundly affected by airport noise. Thus, while the airport was more firmly establishing itself at its original location, the conflicting demands between the airport and urban development in its vicinity were becoming apparent.

MAP 3 FALUDI PLAN – 1949



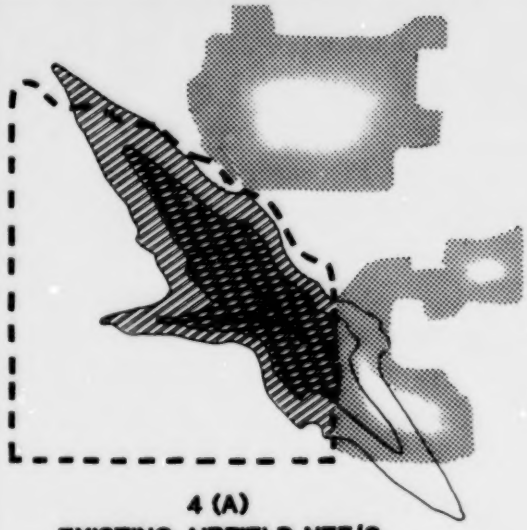
The conflict between the airport and continued urban growth in its vicinity was raised in subsequent plans and projects without having been definitively resolved. The 1961 Community Planning Scheme viewed the airport as a constraint to development to the west and southwest, describing it as "a mixed blessing". It stated that "the quick access to the Central Business District is possibly the only advantage to be gained from this location. However, the location remains a fait accompli ..." Further the report comments that the airport land" is most desirable for residential development in the event of future abandonment."

The airport was not abandoned at that location but remained and grew through the 1960's. Land use policies restricted residential growth to the south and west in order to protect expansion options. The major challenge to this protectionist policy was the application by Cairns Homes Limited to develop a residential subdivision on an area of land immediately south of the airport known as Westridge Park (see map 1). The requested subdivision and zoning was approved by City Council in 1974, but was subsequently denied by the Provincial Government in order to protect future airport expansion options.

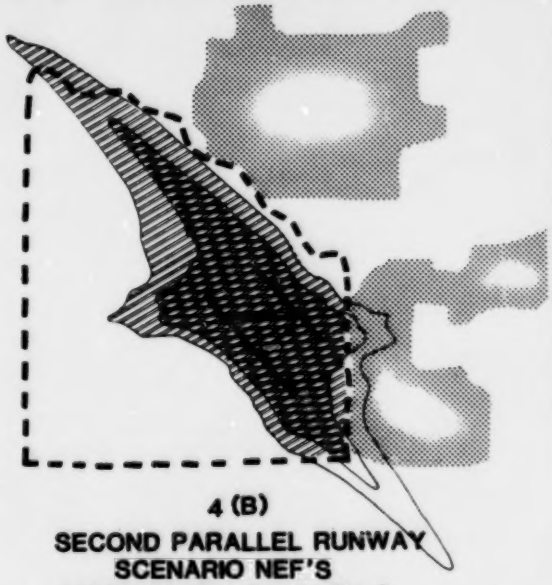
A major airport study, possibly prompted in part by the Westridge proposal, was completed by Transport Canada in 1977. It concluded that the airport should remain in its present location and rejected alternatives which involved relocation of the facility. Preference was given to a runway expansion option which involved the development of a second parallel runway as shown on Map 4b). The resulting noise contour shows a diminished impact on the existing residential development to the southeast of the airport, but a virtual sterilization of land for any residential development west of Pasqua Street for a distance of 1.5 kilometers or more.

The prospect of a second parallel runway prompted the City, in Regina RSVP - A Planning Strategy for Regina, to identify the airport as a complete barrier to southwestly residential expansion of the city. Included in the Strategy, which was adopted in 1979, were policies restricting

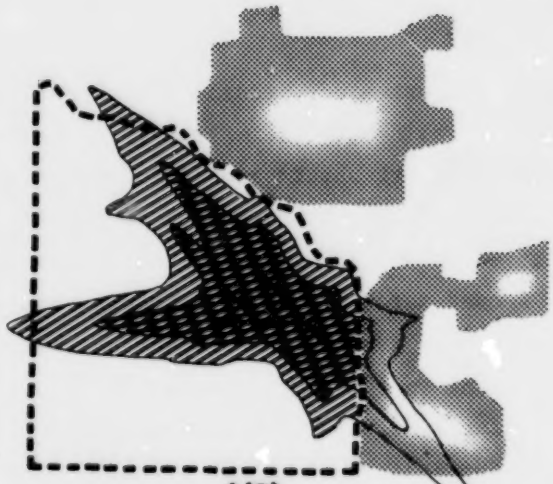
MAP 4 AIRFIELD PLANS & RESULTING NOISE IMPACTS



4 (A)
EXISTING AIRFIELD NEF'S



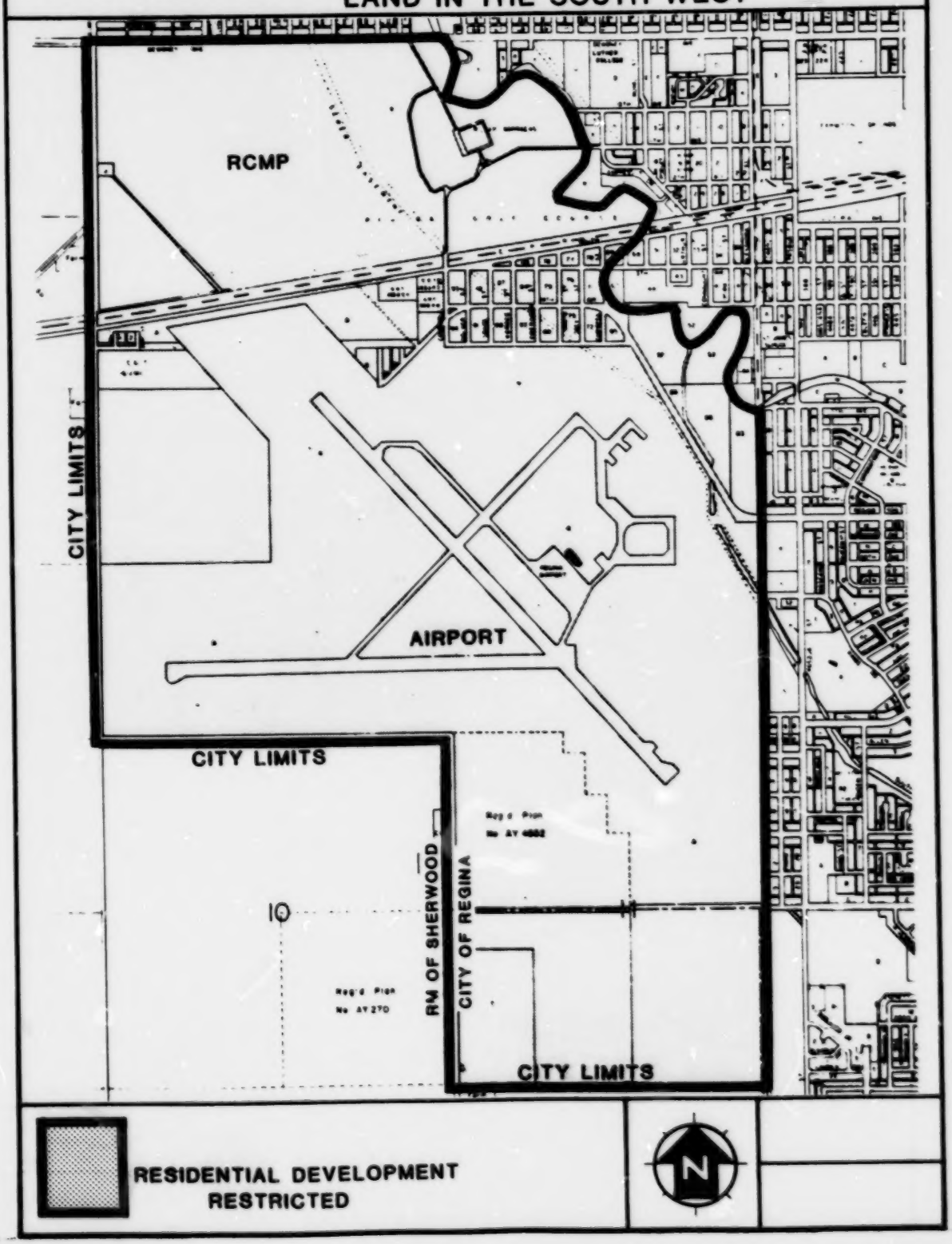
4 (B)
SECOND PARALLEL RUNWAY
SCENARIO NEF'S
(1977 Airport Study Plan).



4 (C)
EXTENSION OF EXISTING RUNWAY
SCENARIO NEF'S
(1986 Airport Study prefered option)

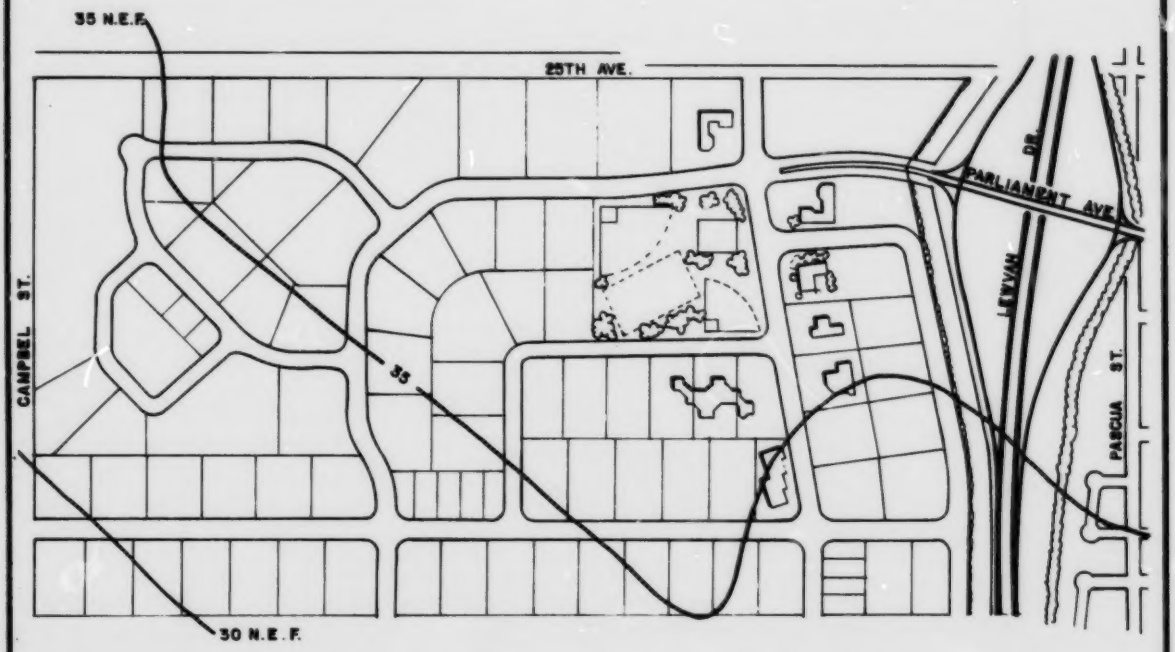
MAP 5 REGINA DEVELOPMENT PLAN

LAND IN THE SOUTH WEST



MAP 6

PROPOSED WESTRIDGE BUSINESS PARK



N

Scale 1:1000

0 1000 2000

residential development in areas subject to airport noise. These policies remain in effect today, although the definition of which areas are impacted by airport noise may change in the revised Development Plan which is now being prepared.

1.3.2 Westridge Business Park

In May 1982, Cairns Homes Limited submitted a new proposal for the development of Westridge to the Planning Department for its consideration. The concept of a residential subdivision was abandoned in favour of a light industrial business park, which was intended to more easily co-exist with the ongoing airport operation and the prospect of a second parallel runway. The proposal was reviewed and discussed extensively with a variety of interested parties and agencies. Numerous concerns were expressed with various aspects of the proposal including contravention of the Development Plan, contravention of policies related to industrial development, impact on Ross Industrial Park, storm water management deficiencies, street connection problems at Lewvan Drive, difficulty in providing transit service and adverse impact on adjacent residential neighbourhoods.

The most definitive objection was raised by Transport Canada with regard to the limitations the subdivision would place on proposed runway expansion opportunities. Consequently they urged deferral of the subdivision pending the completion of a review of long term runway needs which they were undertaking. Notwithstanding these concerns, Cairns Homes submitted an application for subdivision approval in May of 1983 and following a further review, Council deferred a decision on the proposal pending "submission and examination of Transport Canada's Airside Component of the Airport Master Plan."

1.3.3 Airport Master Plan

Preparation of an Airport Master Plan was authorized by Transport Canada in March 1984. The Plan is to provide a guideline for development of the airport to 2004 but implications of the plan will undoubtedly be felt well beyond this time frame.

The proposed airfield development will meet projected aircraft traffic volumes and accommodate the B767 aircraft which has direct flight trans-oceanic capability. It calls for extensions to the northwest of the primary runway, extension to the west of the secondary crosswind runway and the development of associated taxiways and a small runway primarily for the use of local aircraft "touch and go" flying training practice. The second parallel runway option which was favoured in the 1977 study and on which the Regina Development Plan was based, has been abandoned. This abandonment generates a different set of constraints and opportunities for development in the vicinity. The Airport Master Plan will be discussed in more detail in subsequent sections of this report (see Section 2.2 and map 11).

1.3.4 Southwest Sector Feasibility Study Terms of Reference

The Planning Department became aware that Transport Canada was reconsidering the second parallel runway scenario in favour of expanding the existing runways, and it became apparant that a review of the long term prospects for development of the Southwest Sector was warranted. The abandonment of the second paralley runway opens up new prospects for development in this area which need to be considered in order to provide an overall context in which applications such as Westridge can be evaluated. Consequently, City Council approved the terms of reference for this study on September 16, 1985, as per the attached Appendix A.

1.4 Identification of Issues

There are a number of issues related to the development of the Southwest Sector which are identified in this section.

1.4.1 Evaluation of Development Capability

The first set of issues are of a technical nature, concerned with the feasibility of development being undertaken in the Southwest Sector:

i) Can urban services be provided in an economical manner; including sewers, water, roads and utilities?

ii) How will noise generated by aircraft affect residential development?

iii) Will development be compatible with existing land uses and developments in the vicinity?

iv) What are the environmental concerns relating to gas and oil pipelines, potential groundwater contamination, agricultural capability, wind direction and odour, flooding, suitability of the soil and railway noise?

1.4.2 Generation of Development Options

A second set of issues deals with the type of development which can be considered for the Southwest Sector:

i) What would be the form of development if urban growth in the Southwest Sector occurred and the airport remained?

ii) What would be the form of development if urban growth in the Southwest Sector occurred and the airport was relocated in the long term?

iii) What forms of development could occur if the Southwest Sector was not established as a residential growth sector?

1.4.3 Evaluation of Development Options

A third set of issues is concerned with the relative merits of the potential development scenarios.

i) Is there a need for the city to accommodate the magnitude of development which can occur in the Southwest Sector?

ii) Can the Southwest Sector fit into the long term pattern of residential growth of the city?

iii) What other long term growth options are available to the city?

iv) What are the implications of industrial development in the Southwest Sector on Ross Industrial Park, other potential industrial areas and the overall growth pattern of the city?

v) What are the effects of development of the Southwest Sector on the various transportation systems - road, air and rail?

1.4.4 Shorter Range Planning Issues

A fourth set of issues includes shorter range planning concerns and how they are affected by the long term prospects for development of the Southwest Sector.

i) What are the implications for Westridge?

ii) What are the implications for the Parliament Avenue extension?

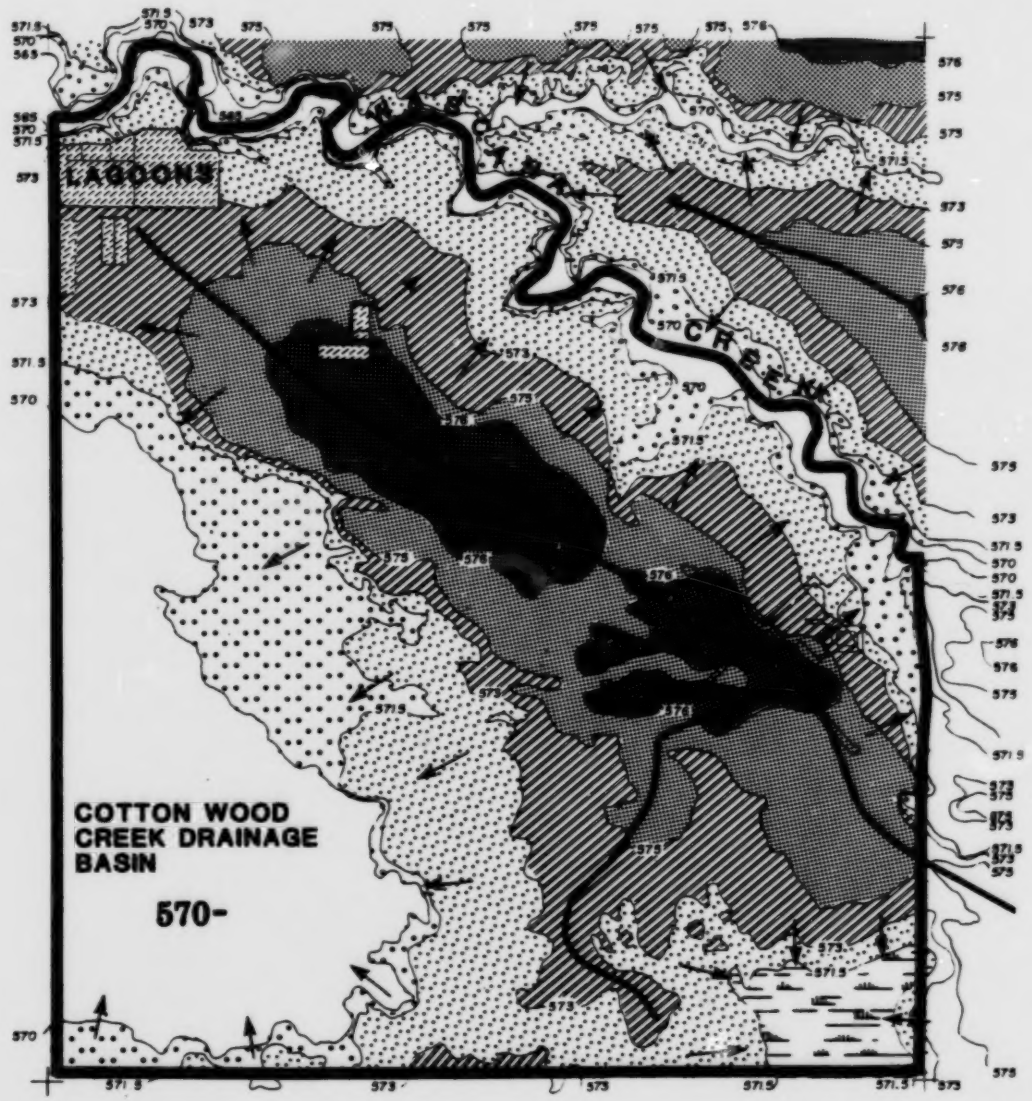
iii) What are the implications for the airport expansion?

These issues will be addressed in the course of the study.

SECTION 2

PHYSICAL CAPACITY FOR DEVELOPMENT

MAP 7 TOPOGRAPHY & DRAINAGE



HEIGHTS OF LAND/WATER SHEDS

DIRECTION OF OVERLAND DRAINAGE

BOUNDARY OF THE SOUTHWEST SECTOR

N

SCALE 1:60,000

1km 0 1km

2.0 PHYSICAL CAPACITY FOR DEVELOPMENT

2.1 Servicing:

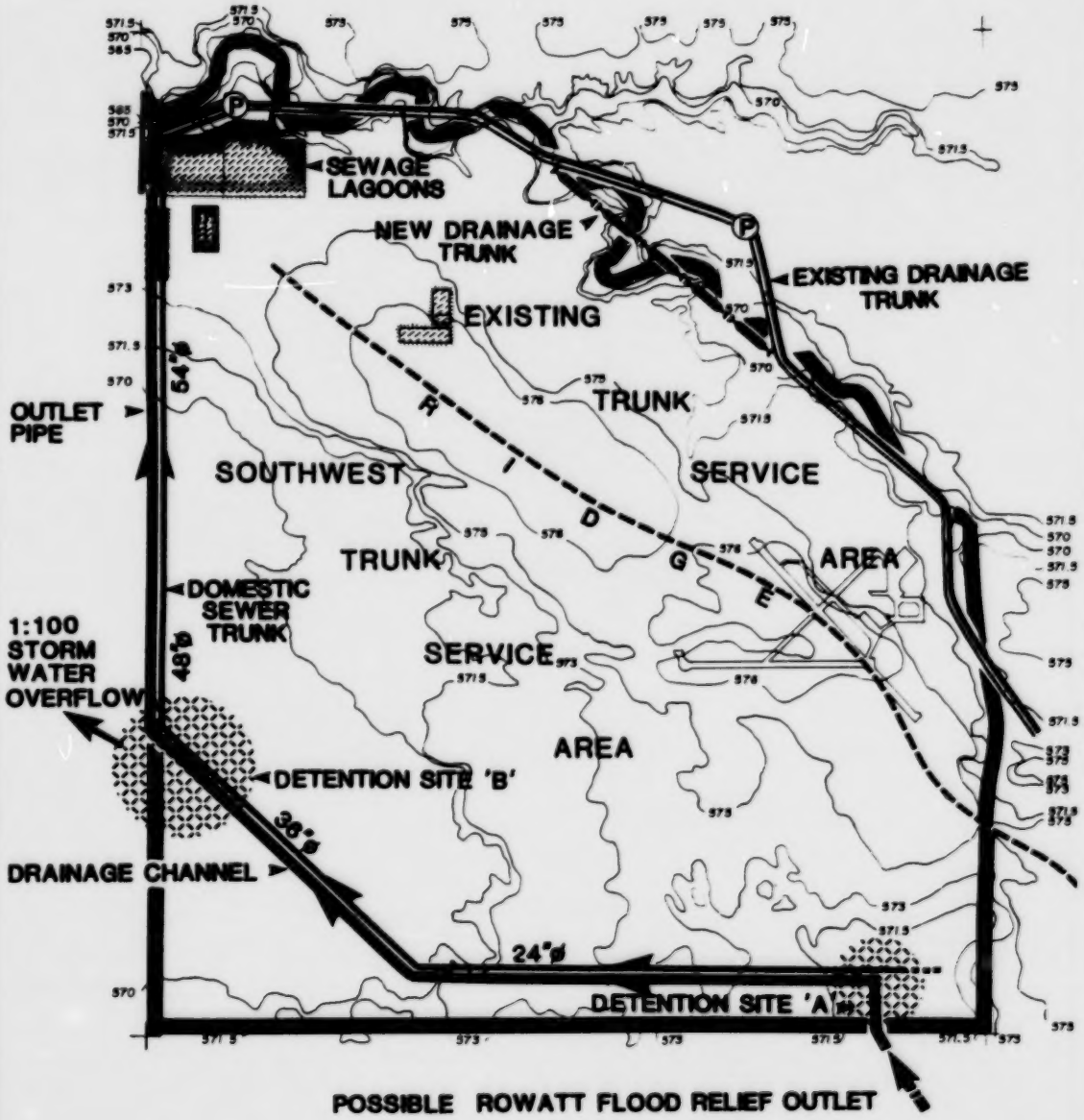
2.1.1 Domestic and Storm Drainage

A ridge of land running in a northwest-southeast direction bisects the Southwest Sector into two distinct service areas; the area to the northeast which drains into Wascana Creek, and the area to the southwest which drains to the west into the Cottonwood Creek drainage basin (see Map 7). A portion of the sector lying in the southeast corner drains directly to the south, contributing to the flooding problems which are experienced in the Rowatt area. This area is landlocked and will only flow to Cottonwood Creek when flood levels rise in the lowest lying areas.

The two servicing areas can be considered separately. The northeast area can be serviced to the existing domestic trunk sewer which runs along Wascana Creek. The existing trunk would require upgrading to accommodate the increased demand, at a cost of approximately two million dollars. (Note: all costs stated in this report are in 1986 dollars). In total, 1750 ha would have domestic sewer outlet at a cost of $1,200 per ha.

The southwest portion of the sector can be serviced by a domestic trunk line which would carry sewage to the City Treatment Plant as shown on Map 8. Storm drainage would be accommodated by the development of a new drainage channel and the establishment of two storm water retention ponds at low lying areas. It should be noted that this drainage outlet could facilitate the management of storm water in the Rowatt area, in addition to servicing urban development in the Sector. The cost of these domestic sewer and drainage works is approximately ten million dollars. Including only the area within the Southwest Sector (excluding the farmland to the south which could also drain into this system if the grades were lowered) 3,700 ha would be provided with domestic and storm drainage outlet, at a cost of $2,800 per ha.

MAP 8 TRUNK SEWERS



RIDGE OF LAND

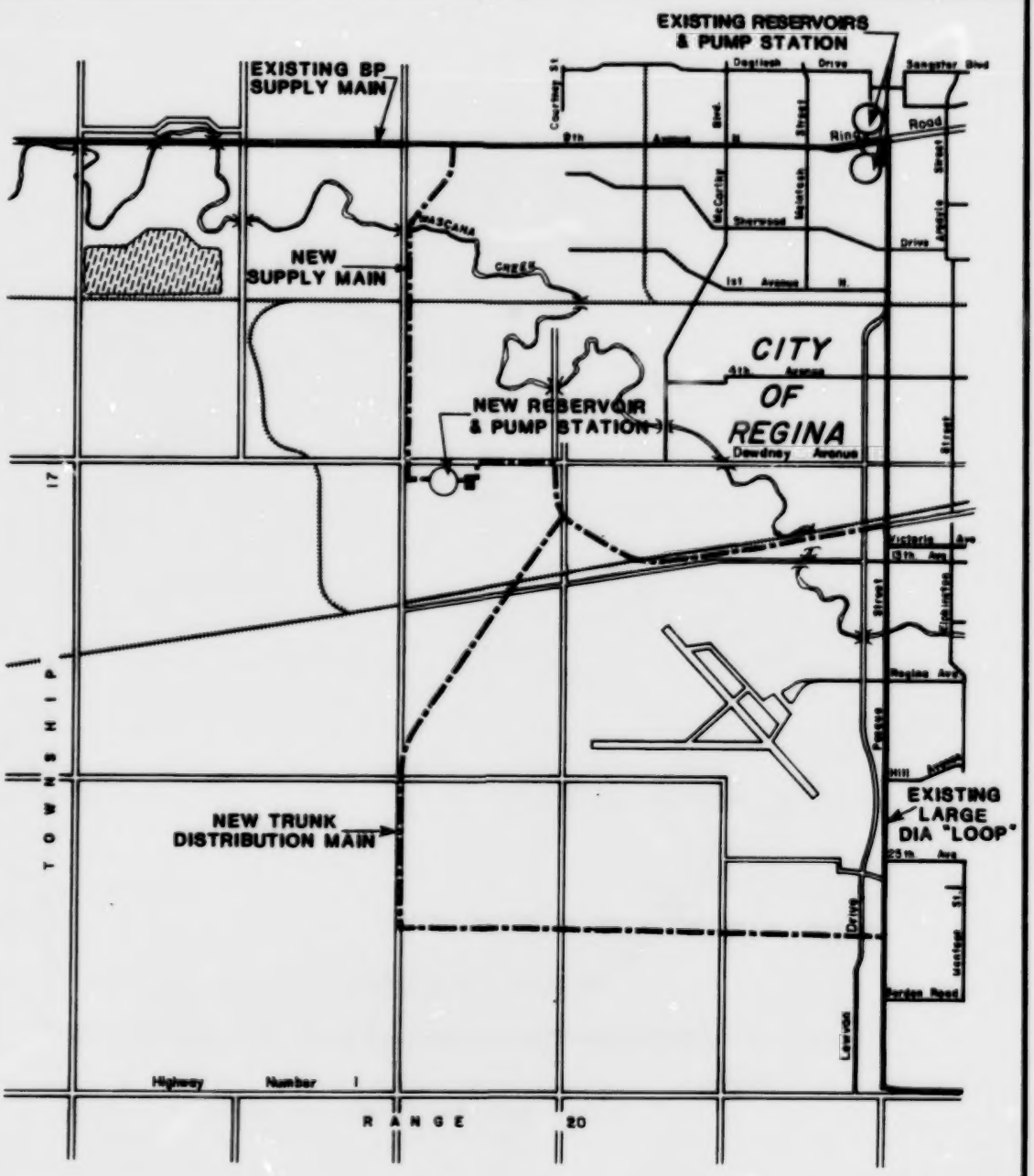
PROPOSED SEWER TRUNK

N

SCALE 1:60,000

1km 0 1km

MAP 9 WATER SERVICE



POSSIBLE LOCATION OF RESERVOIR AND PUMP STATION TO SERVE MAJOR DEVELOPMENT IN S.W. REGINA

N

SCALE 1:60,000

1km 0 1km

The cost to the City of providing trunk services and major infrastructure averages approximately $48,000/ha, which is recovered through a fee assessed on new subdivisions. On this basis, the southwest portion of the site with the construction of the new drainage channel may cost approximately 3.5% more than the easily serviced northeastern portion of the site.

2.1.2 Water Service

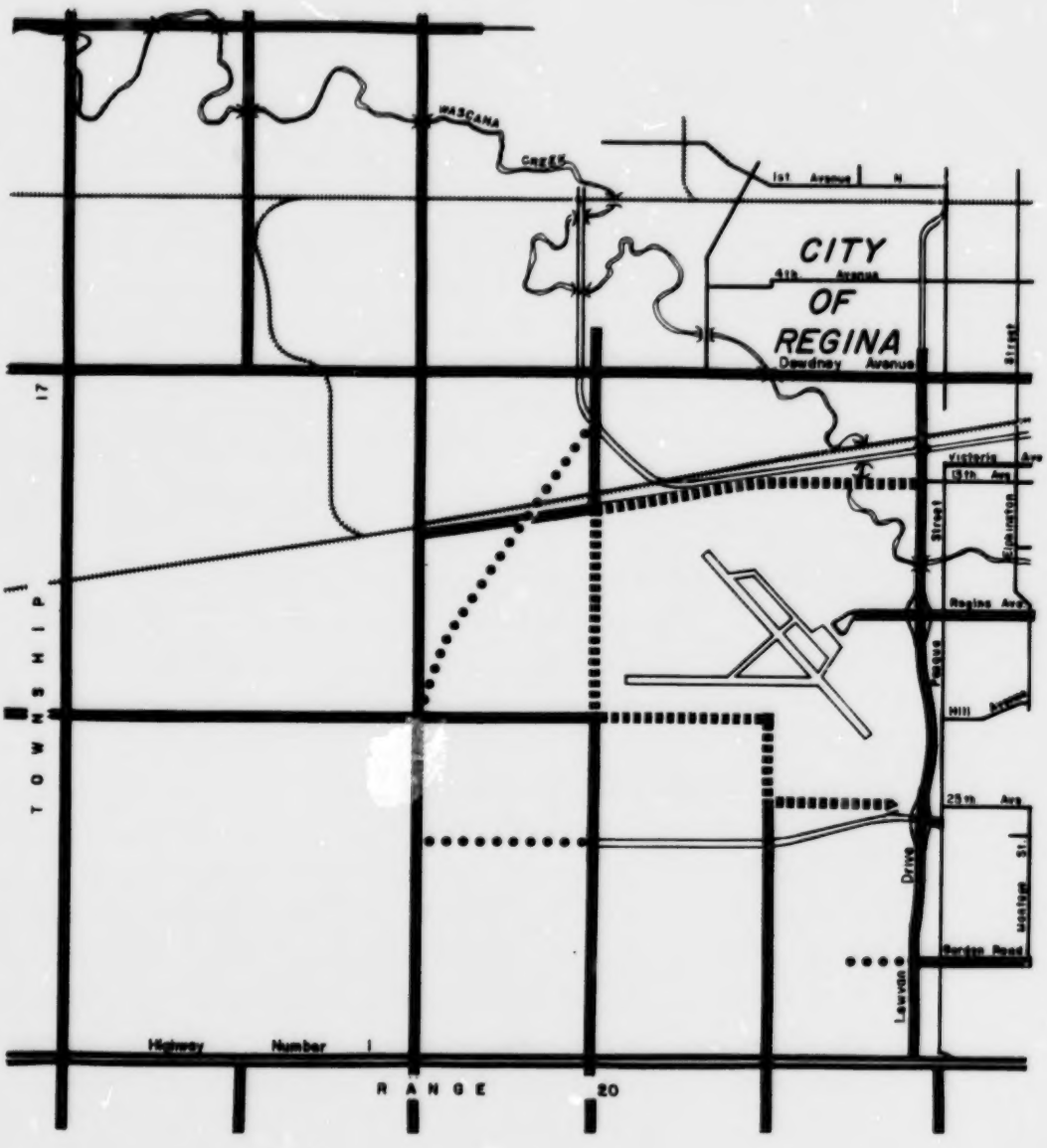
Water services may be extended westwards from the large diameter loop main which is on the east side of Lewvan Drive. The extent of development for which services can be carried westwards is not determined. For present purposes, it may be assumed that Courtney Street is the limit. A second feed from the north, possibly on Courtney Street would be required to reinforce the system.

Servicing for development in the Southwest Sector to the west of Courtney Street would be addressed in a long term plan for the water utility. A new major watermain is required to serve the area, as is additional pumping capacity. The route of the watermain, the location of pumping capacity and the size of these facilities will depend upon the rate and locations of other developments.

One possible scenario provides for a new reservoir and pumping facility in the Southwest Sector. Under this plan, a reservoir is situated on the high land south of the Procor gas storage facility. Avoidance of conflict with airport height limitations may be a consideration. The reservoir is located to provide the same top water level as the existing reservoirs at 9th Avenue North and Pasqua Street. A new main from the Buffalo Pound Supply Line connects to the reservoir. A pump station and large distribution main feeds southwards to a new large watermain on Saskatchewan Drive.

The cost of this scenario is approximately $12 million. This cost is not unique to the Southwest Sector as similar costs will be incurred to service new development wherever it occurs.

MAP 10 ROADS



EXISTING ROADS

POSSIBLE CLOSURES DUE TO AIRPORT EXPANSION

PROPOSED NEW ROADS

POSSIBLE NEW ROADS

N

2.1.3 Roads

The flat terrain of the study area presents few constraints to road alignments. The Southwest Sector is bounded by the No. 1 Highway to the south and Lewvan Drive to the east, which act as major traffic carriers. Internal roads include Dewdney Avenue and several rural grid roads, as shown on Map 10.

New roads may include westerly extensions of Gordon Road and Parliament Avenue into the Southwest Sector and a continuation of Saskatchewan Drive/Courtney Street Expressway to Highway No. 1. Other roads could be provided as per normal subdivision design and development practices.

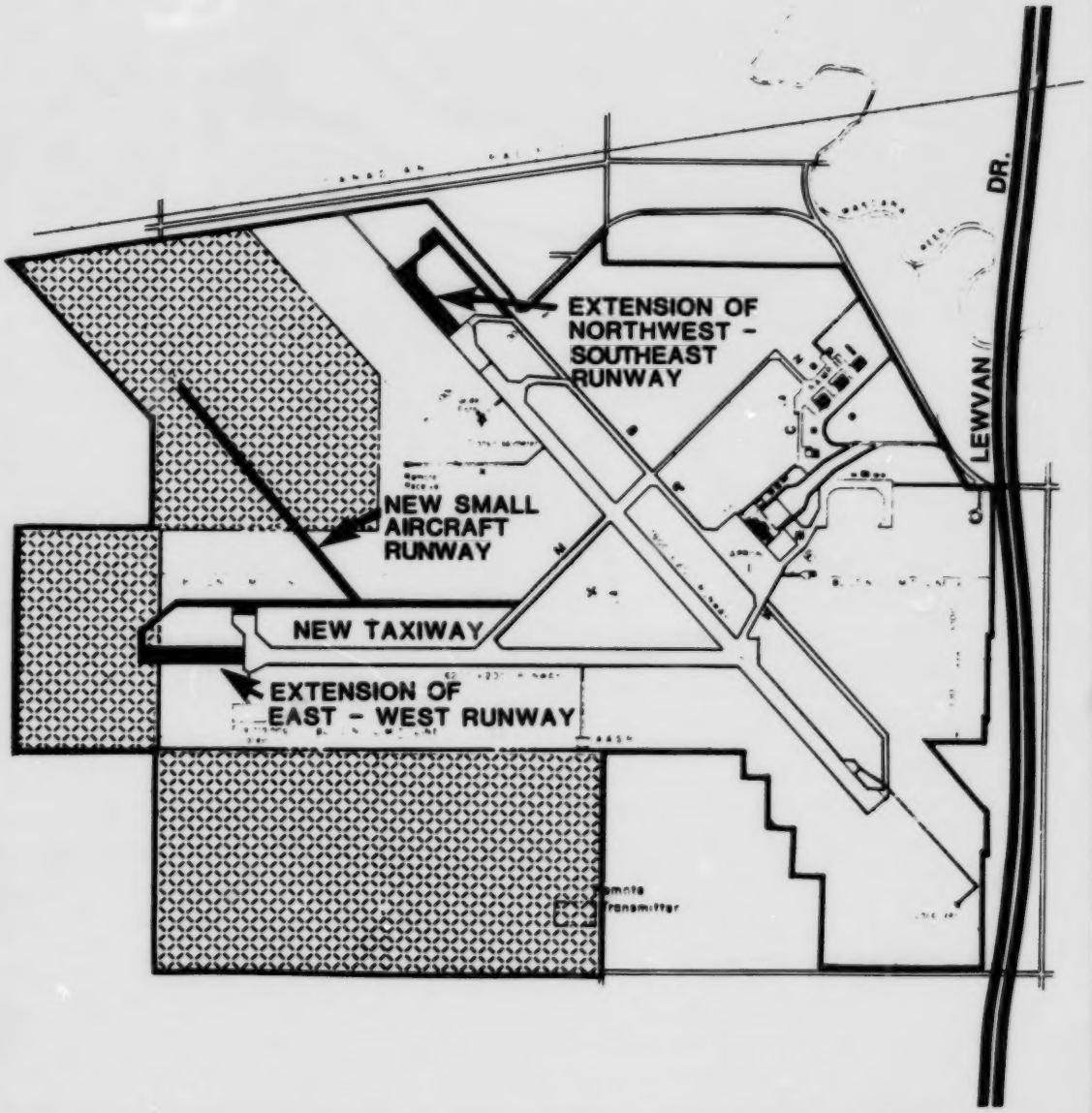
2.1.4 Electrical, Gas and Telephone Services

Electrical, gas and telephone service could be provided to the area with normal construction charges.

Saskatchewan Power Corporation has major gas pipeline facilities in the sector which would be used to service the area. There is a 72,000 volt power line along the south edge of South Railway which would be costly to relocate or place underground and thus consideration should be given to options which allow for its retention.

Sask Tel could service areas south of the airport via an extension of the existing underground structure on Gordon Road across Lewvan Drive.

MAP 11 AIRPORT MASTER PLAN



AIRPORT BOUNDARY

ADDITIONAL LAND REQUIREMENTS

N

SCALE 1"=200'

100' 0 100'

2.2 Airport Impacts

2.2.1 Airport Plans

Transport Canada has now adopted a new Master Plan for the Regina Airport which covers a twenty year planning horizon. Major elements of the Plan include a westerly extension of the east-west runway, extension of the northwest-southeast runway to the northwest, additional land acquisition to accommodate the runway expansions and new radar facilities, new taxiways, and a possible second northwest/southeast runway to accommodate small aircraft (see Map 11).

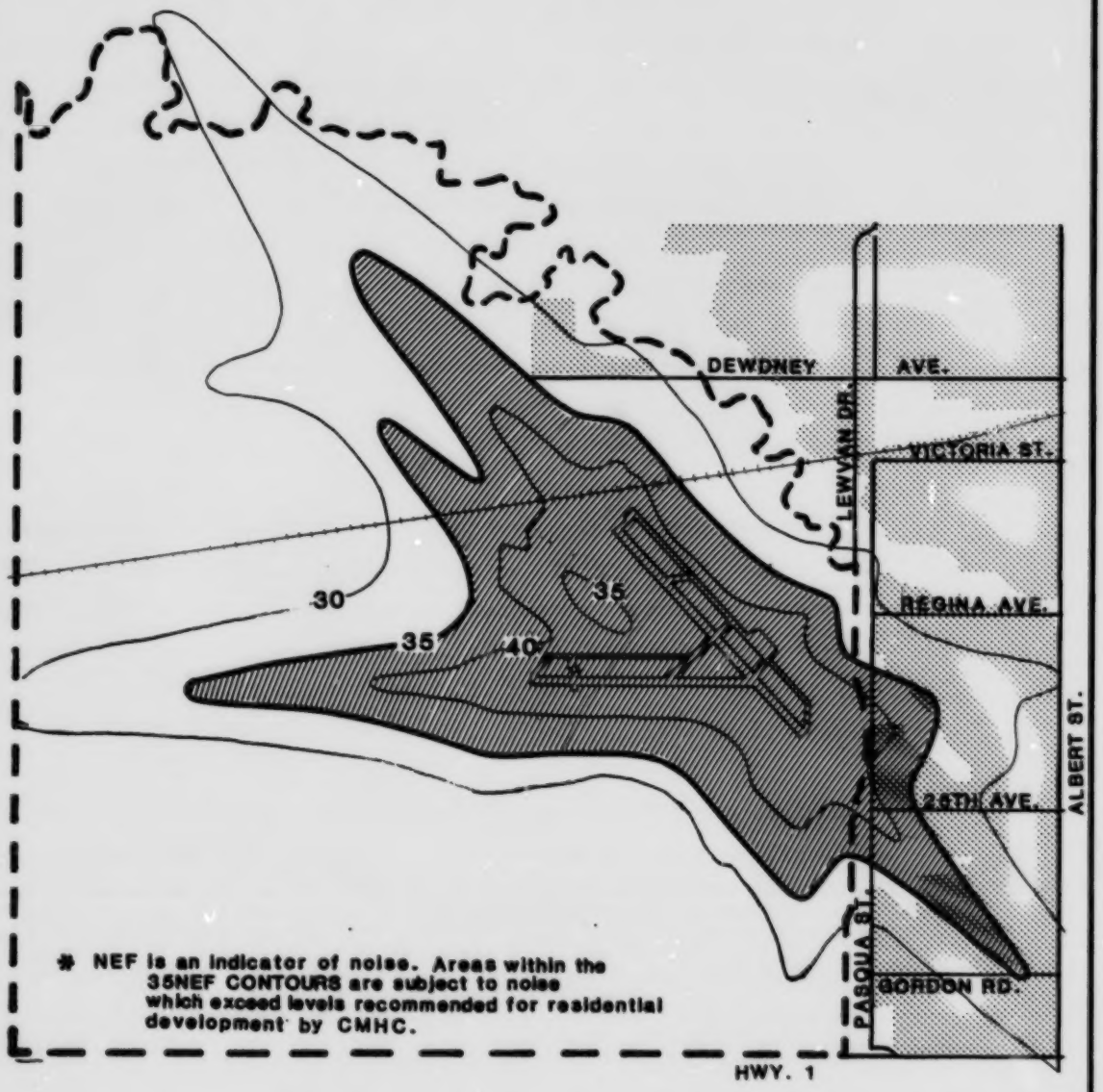
The airport is now completing a major expansion and upgrading of its terminal building and parking facilities. This development is intended to meet the airport needs for the next twenty years.

2.2.2 Noise Impacts

The noise impact of airport operations on adjacent areas is measured in a composite indicator called the Noise Exposure Forecast (NEF). The NEF takes into account such factors as the volume, duration and frequency of noise and the time of day in which the noise occurs. Map 12 shows the NEF levels which will occur if the airport is developed as planned, for the time period 1995-2005.

Standards developed by Canada Mortgage and Housing Corporation prescribe that areas experiencing a NEF of 30 or less can be developed for residential use without any special consideration of noise impacts. Areas lying between the 30 and 35 NEF contours can be developed for residential uses if appropriate techniques to reduce the noise impact are utilized e.g. smaller windows in the direction of the noise source. Areas exposed to noise greater than 35 NEF are not suitable for residential development.

MAP 12 AIRPORT NOISE IMPACT PROJECTIONS 2005



AREA WITHIN 35 NEF CONTOUR – 1995 TO 2005

BOUNDARY OF THE SOUTHWEST SECTOR

N

SCALE 1:60,000

1km 0 1km

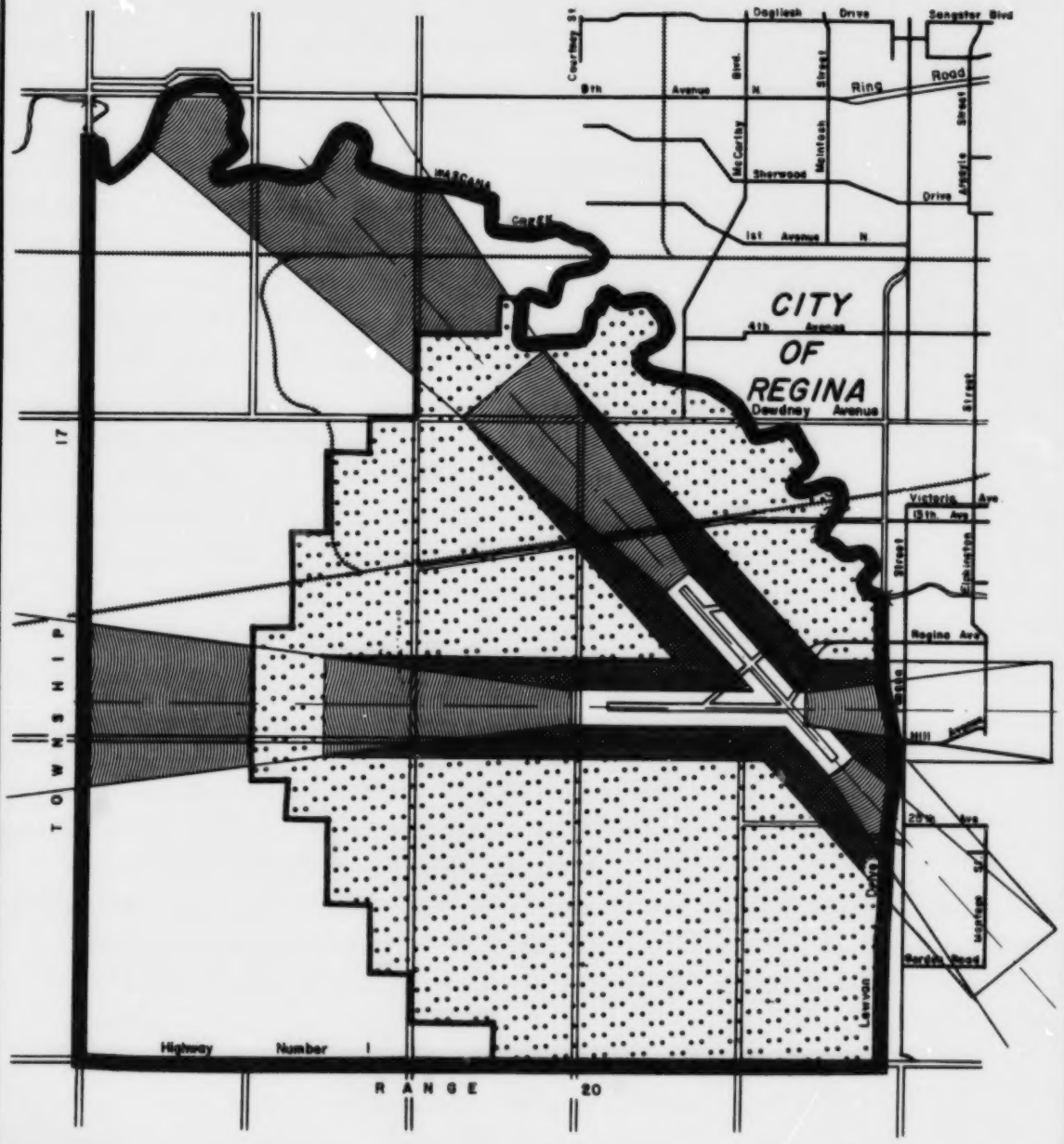
Regina's Development Plan contains similar policies to regulate residential development in areas subject to airport noise. It differs from the CMHC standards, however, in that it permits noise insulated residential development between the 30 and 35 NEF contours only "within the built up areas", and would not permit new residential development on lands lying between the 30 and 35 NEF contours in the Southwest Sector.

This policy was developed in the early 1970's in response to a concern that housing was being built in noise prone areas (in many cases within the 35 or even 40 NEF contours) and aviation technology was developing ever larger and louder aircraft. The extra provisions of the city policy (i.e. restricting new residential development between the 30 and 35 NEF's to infill areas only) was imposed to act as an additional protection which would provide an allowance in the event of the noise projections being under-estimated. However, the trend has been for the noise impacts to be over-estimated due to the development of quieter aircraft and a slower than expected growth in aviation activity. These trends appear to be continuing and an evaluation of the applicability of the City policy to the Southwest Sector should be undertaken at the time residential development becomes immenent.

The implications of establishing the limit of residential development at the 30 NEF contour vs. the 35 NEF contour are not great as it pertains to the Southwest Sector generally, in view of the relatively small proportion of the land which is affected. However, the consequences for the Westridge Subdivision, which includes much of the land lying between the 30 and 35 NEF contours, is very significant and will be discussed further in Section 6.1.

As Map 12 shows, the area within which residential development is not appropriate extends well beyond the airport boundaries. As a result of airport noise, approximately three sections of land (1900ha) are restricted from being developed for residential uses, in addition to the 526.1 ha of land which the airport occupies directly.

MAP 13 OBSTACLE LIMITATION SURFACES



1:50 SLOPE APPROACH SURFACES

1:7 SLOPE TRANSITION SURFACES

OUTER SURFACE

N

SCALE 1:60,000

1km 0 1km

2.2.3 Flight Obstructions

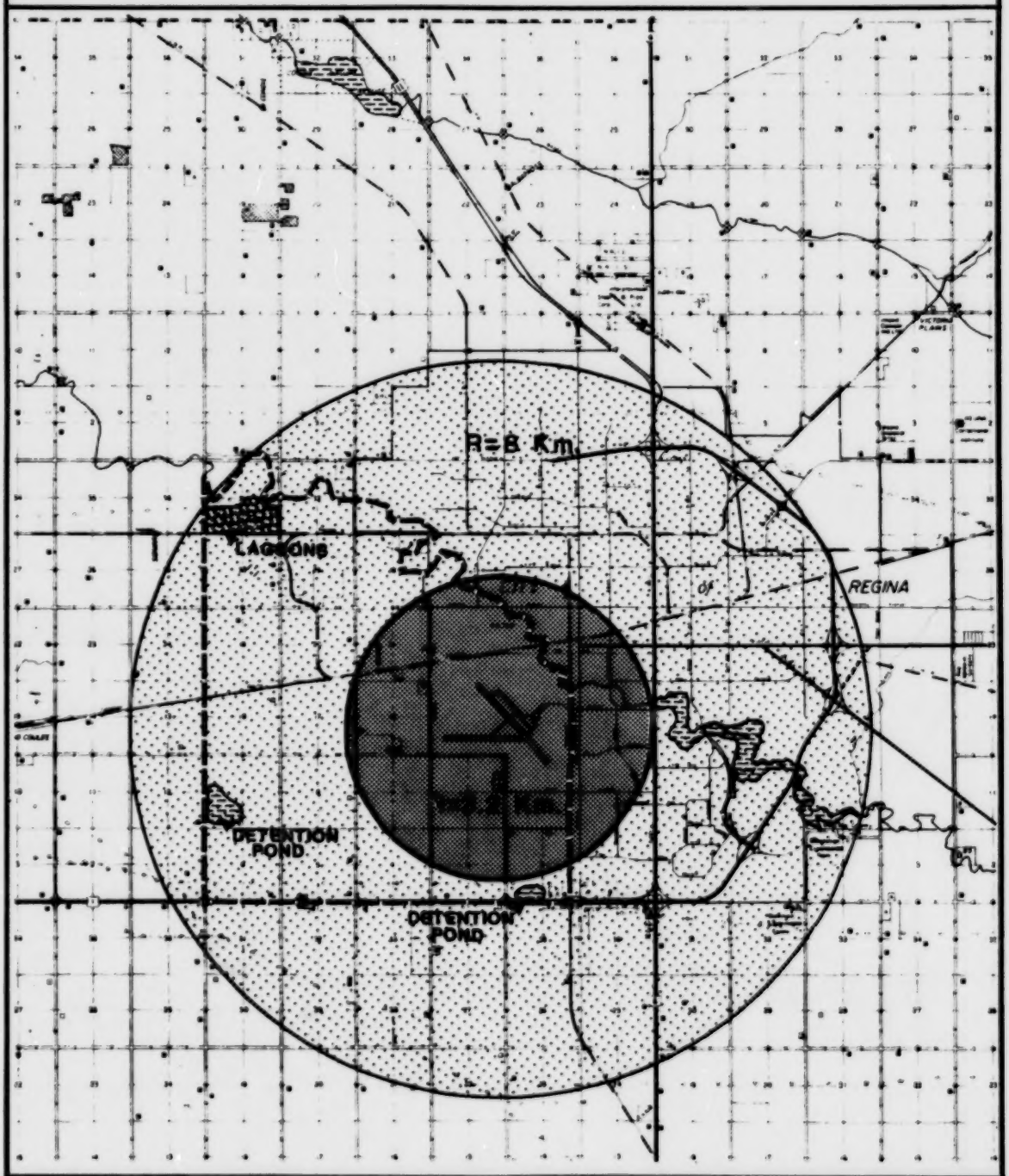
For obvious safety reasons, flight paths must be kept free of buildings or structures which could obstruct flight operations. Transport Canada has established Obstacle Limitation Surfaces which prescribe the envelopes within which structures may be permitted. As Map 13 shows, structures may be subject to restrictions on their height, in order to comply with Transport Canada regulations.

In conjunction with height limitations, use limitations can also be considered to protect the airport's neighbours from the potential danger of aircraft crashes. In the United States the Doolittle Commission recommended in 1952 that "clear zones" be established at the end of runways. These would be fan shaped areas extending at least 3300m long and 1850m wide at the outer edge within which "no schools, hospitals, churches or other places of public assembly" would be permitted. Housing would be recommended for the outer portions only. It should be noted that a "clear zone" approach has not been followed in the area of existing development lying to the east of the airport.

2.2.4 Bird Hazards

Land use and facilities can be regulated to reduce the attraction of birds to areas in which they would present a hazard to aircraft. According to guidelines prepared by Transport Canada, bird sanctuaries, game reserves and food garbage disposal sites should be prohibited within an eight km radius of the airport reference point. In addition, sod farming, piggeries, riding academies, race tracks, fair grounds, drive-in restaurants and food processing plants should be prohibited within a 3.2 km radius of the airport reference point. This is shown on Map 14.

MAP 14 BIRD HAZARD AREAS



AREA SUBJECT TO RESTRICTIONS ON A RANGE OF LAND USES WHICH ATTRACT BIRDS

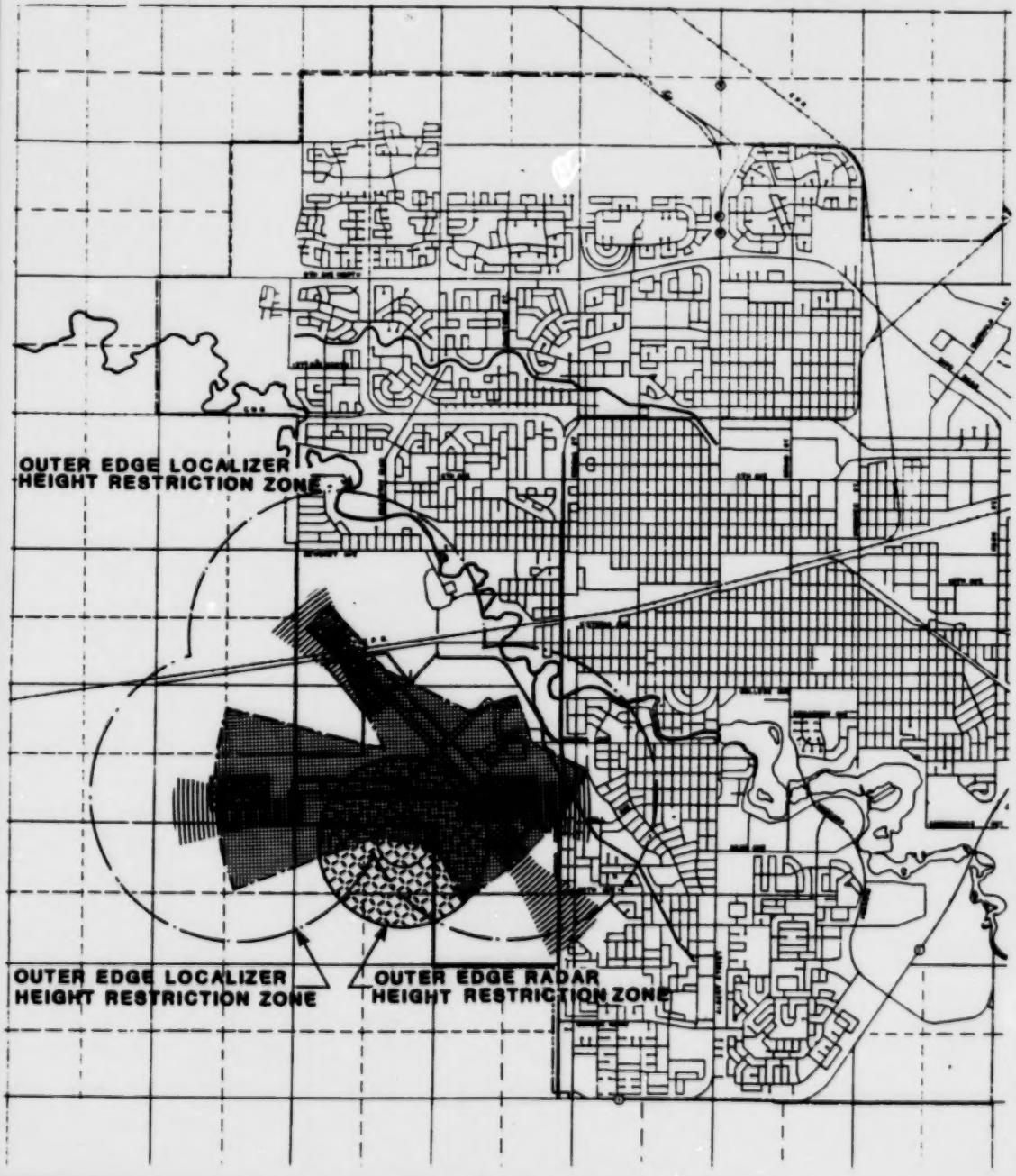
AREA WHICH RESTRICTS BIRD SANCTUARIES, GAME RESERVES AND FOOD GARBAJE DISPOSAL SITES

N

SCALE 1:125,000

1km 0 1km 2km

MAP 15 ELECTRONIC ZONING


OUTER EDGE LOCALIZER HEIGHT RESTRICTION ZONE
OUTER EDGE LOCALIZER HEIGHT RESTRICTION ZONE
OUTER EDGE RADAR HEIGHT RESTRICTION ZONE

LOCALIZER PROTECTION: NO OBJECTS HIGHER THAN 1.2m

RADAR PROTECTION: NO BUILDINGS, METALIC FENCES OR OTHER MANMADE STRUCTURES

LOCALIZER PROTECTION: NO OBJECTS HIGHER THAN 2.5m ; NO METALLIC OBJECTS HIGHER THAN 1.2m

GLIDE PATH PROTECTION: NO METALLIC FENCES, POWER LINES, TELEPHONE LINES, BUILDINGS, ROADS OR RAILROADS

LOCALIZER HEIGHT RESTRICTION ZONE (35° ARCS FROM FUTURE LOCALIZER SITES)

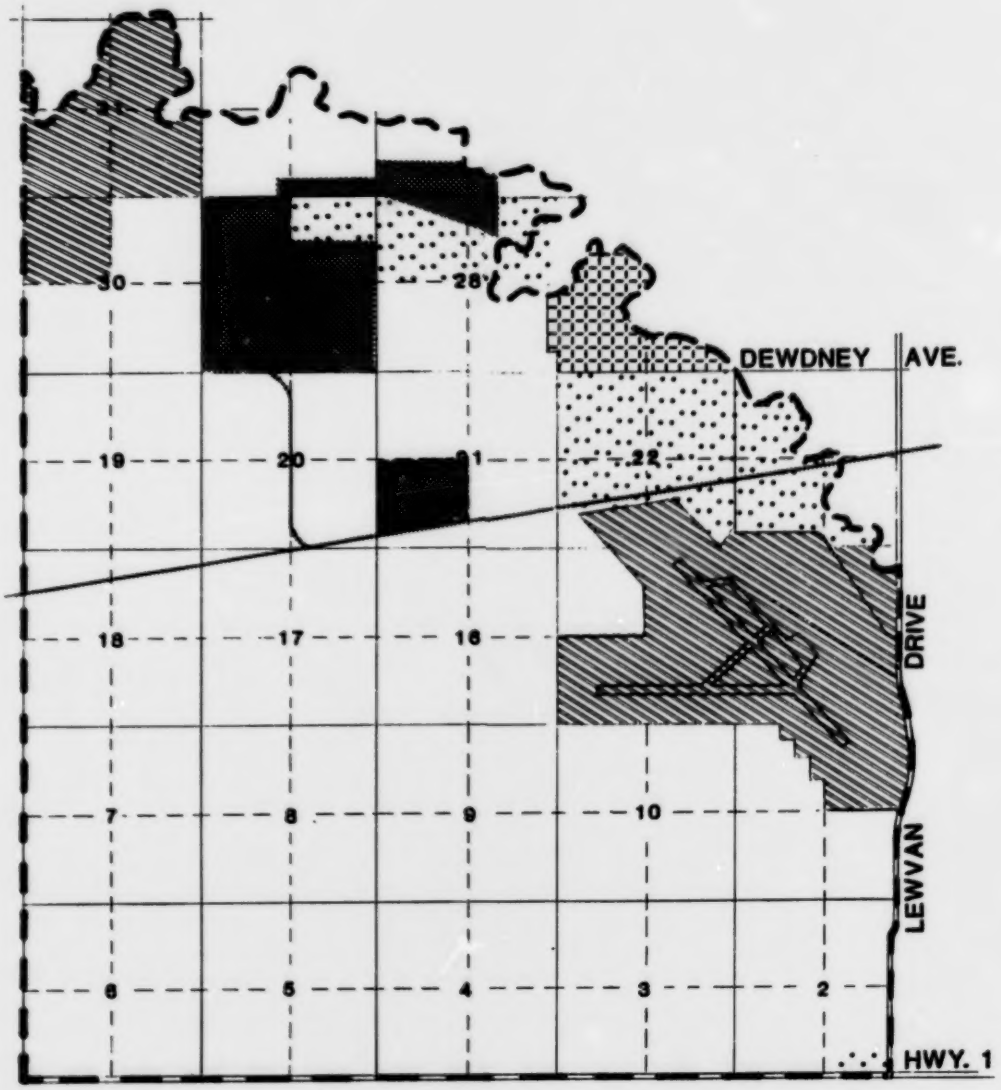
N

SCALE 1:65,000

2.2.5 Other Airport Considerations

Protection of navigational aids, radar and other telecommunication systems requires special consideration when development is undertaken in the vicinity of airports. Map 15 shows those areas in which development should not be permitted due to potential conflict with electronic signals. Development in these areas should only occur with the permission of Transport Canada. A fuller discussion of the development restrictions is contained in Appendix B.

MAP 16 EXISTING LAND USE



2.3 Existing Development and Land Use

Existing development and land uses as shown on map 16, present opportunities and constraints to development of the Sector which will be discussed in this section.

2.3.1 Agriculture

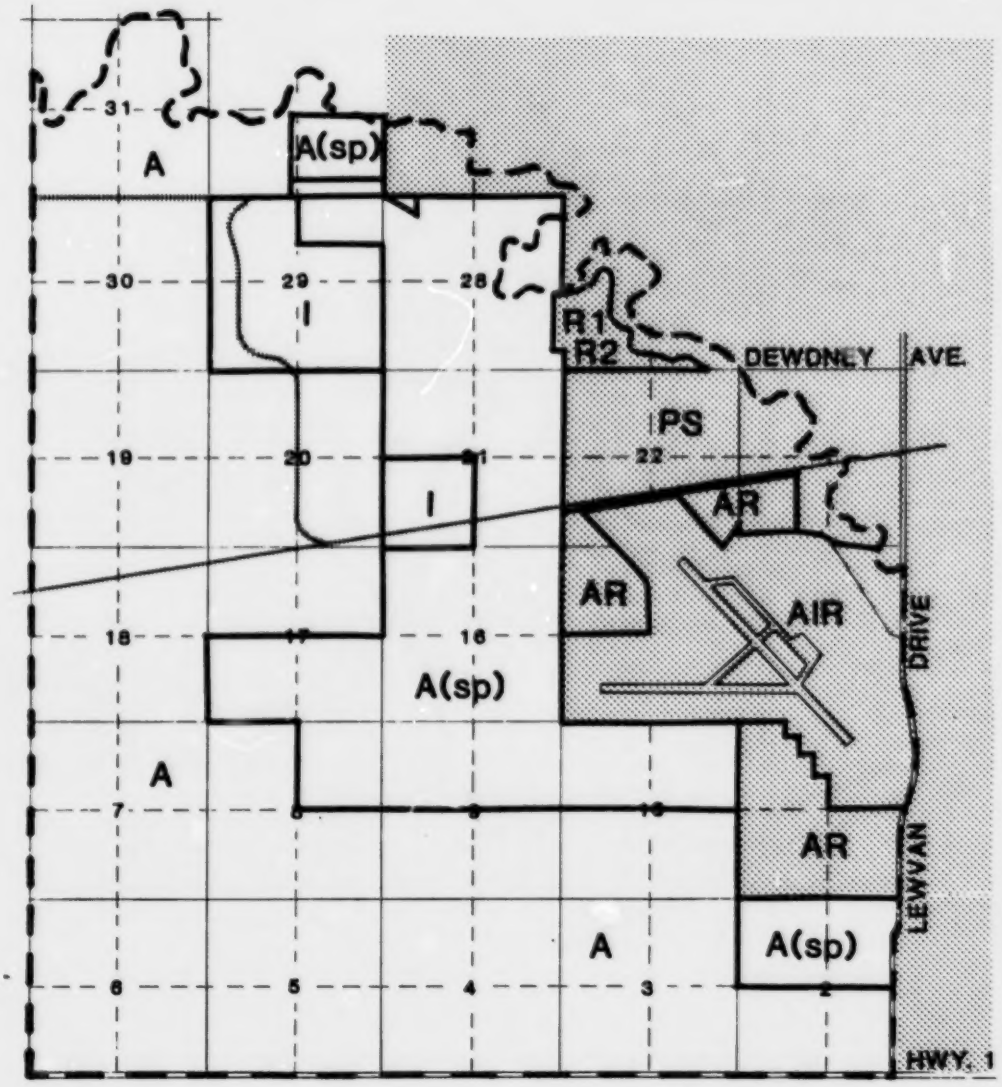
The majority of land in the Southwest Sector is currently used for agriculture, primarily grain farming. Virtually all of the agricultural land lies within the R.M. of Sherwood and is zoned A-Agricultural, except for portions lying in proximity to the airport, which are zoned A (Special)-Agricultural.

2.3.2 Airport

The airport directly occupies a significant portion of the land in the study area, and is entirely within the City of Regina. As discussed in Section 2.2, the impacts of the airport are felt beyond the airport lands, providing a constraint to development on other properties. The airport is expected to remain in its present location for the next twenty years, and there are no plans at present for its relocation beyond that twenty year horizon.

The current proposal for redevelopment of the airport calls for approximately 470 ha (1150 acres) of additional land to be acquired as shown on Map 11. The airport lands are zoned A-Airport, and much of the land affected by airport noise is zoned AR-Airport Restricted or A (Special)-Agricultural where such lands lie within the R.M. of Sherwood.

MAP 17 EXISTING ZONING



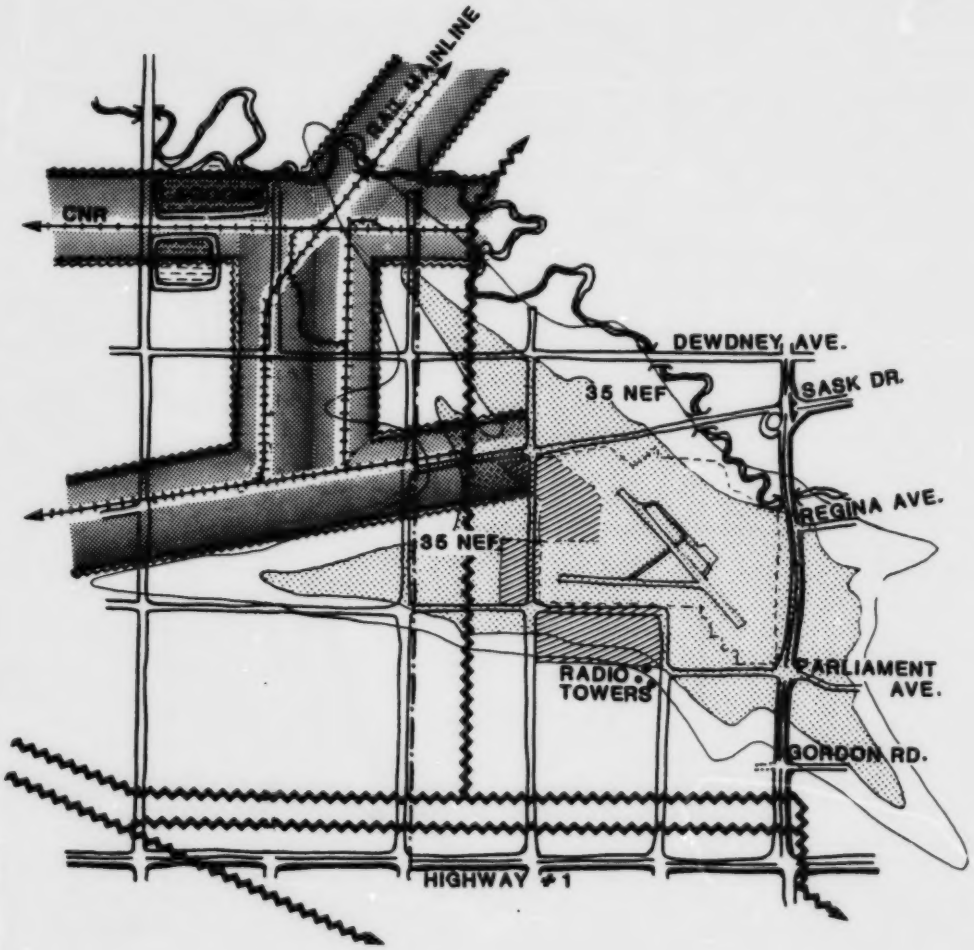
RM OF SHERWOOD		CITY OF REGINA	
A	AGRICULTURAL	AIR	AIRPORT
A(sp)	AGRICULTURAL SPECIAL (AIRPORT)	AR	AIRPORT RESTRICTED
I	INDUSTRIAL	PS	PUBLIC SERVICE
		R1 R2	RESIDENTIAL

N

SCALE 1:60,000

1km 0 1km

MAP 18 SERVICES, UTILITIES AND TRANSPORTATION



RURAL GRID ROADS
URBAN ARTERIAL/HIGHWAY
GAS PIPELINE (underground)
1000' RAIL CORRIDOR
ELECTRIC POWER LINE

ADITIONAL AIRPORT LANDS
AIRPORT NOISE IMPACT (Residential Restricted)

N

2.3.3 Urban Residential

A portion of the study area lying within the City boundary has been developed as a low to medium density stable residential neighbourhood known as Dieppe Place (see Map 16). This area is not subject to redevelopment. As shown on map 17, this area is zoned residential and uses are restricted to a range of low density housing and related uses.

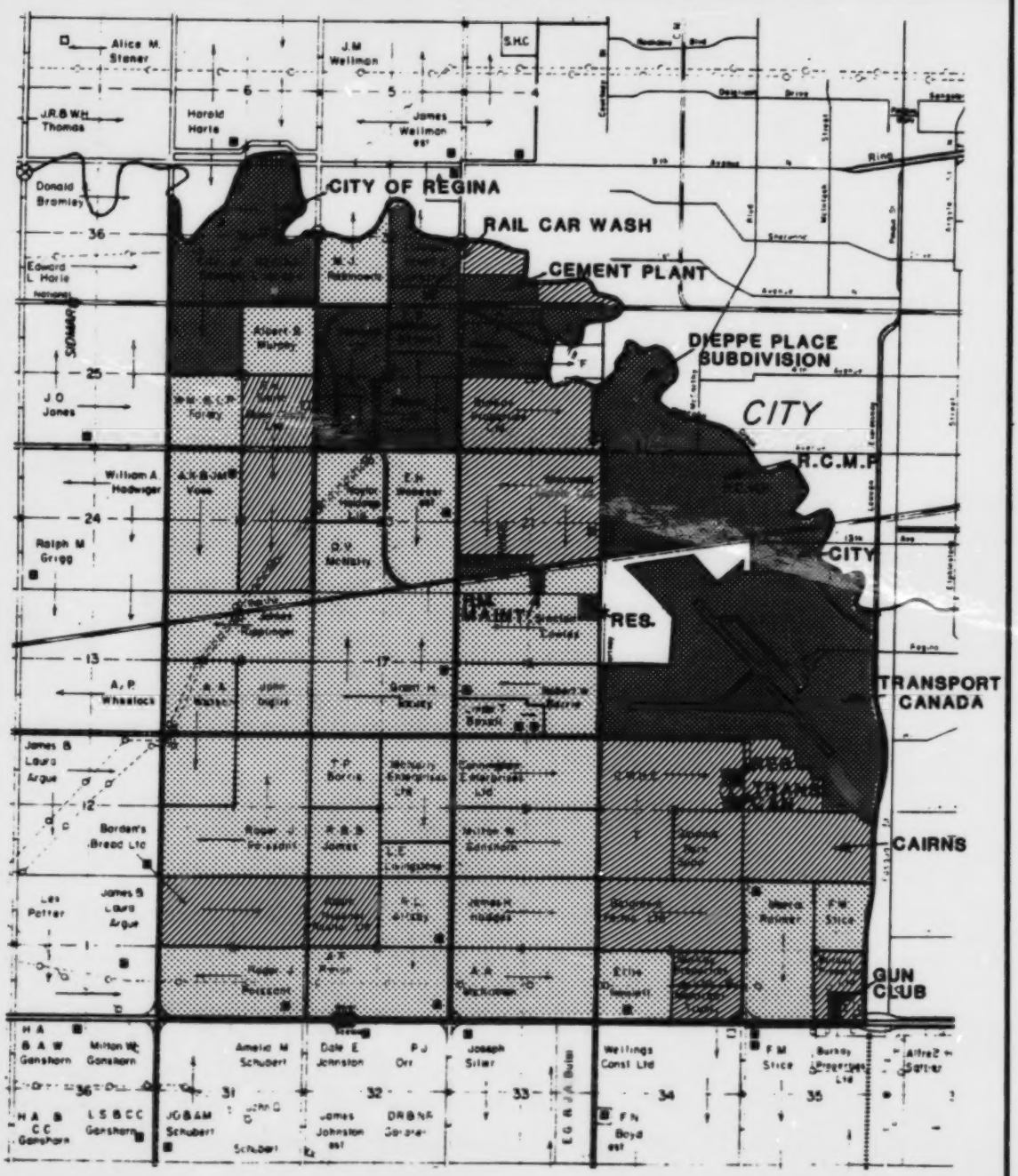
2.3.4 Industrial

There are four large industrial uses within the study area; a cement plant, a clay products manufacturer, a fertilizer plant and a gas storage facility. Because of natural attributes of their site (e.g. clay soil) and the fact that significant capital investments have been made in stationary facilities, it is not practical to relocate these industries. As is shown on Map 16 all four industries are located in the northwest portion of the study area, within the R.M. of Sherwood. All the industrial portions of the sites are zoned I-Industrial, although non-industrial portions of the sites are zoned A (Special)- Agricultural or A-Agricultural (see Map 17).

2.3.5 Services, Utilities and Transportation

Service, utility and transportation uses in the study area, in addition to the airport which has already been discussed in Section 2.3.2, include the City of Regina sewage lagoons, CN and CP rail corridors, several pipeline rights-of-way, a grid road network, and several radio towers. These uses are shown on Map 18. With the exception of the airport and the sewage lagoons, only a small percentage of land area is directly occupied by these uses. However, the rail corridor does present significant constraints to development in that residential uses are restricted within 300m (1000') of the rail lines and roadway crossings are limited. The proposed rail relocation programme would alter the location of some rail lines in the study area, resulting in the alignment shown on Map 18.

MAP 19 PROPERTY OWNERSHIP



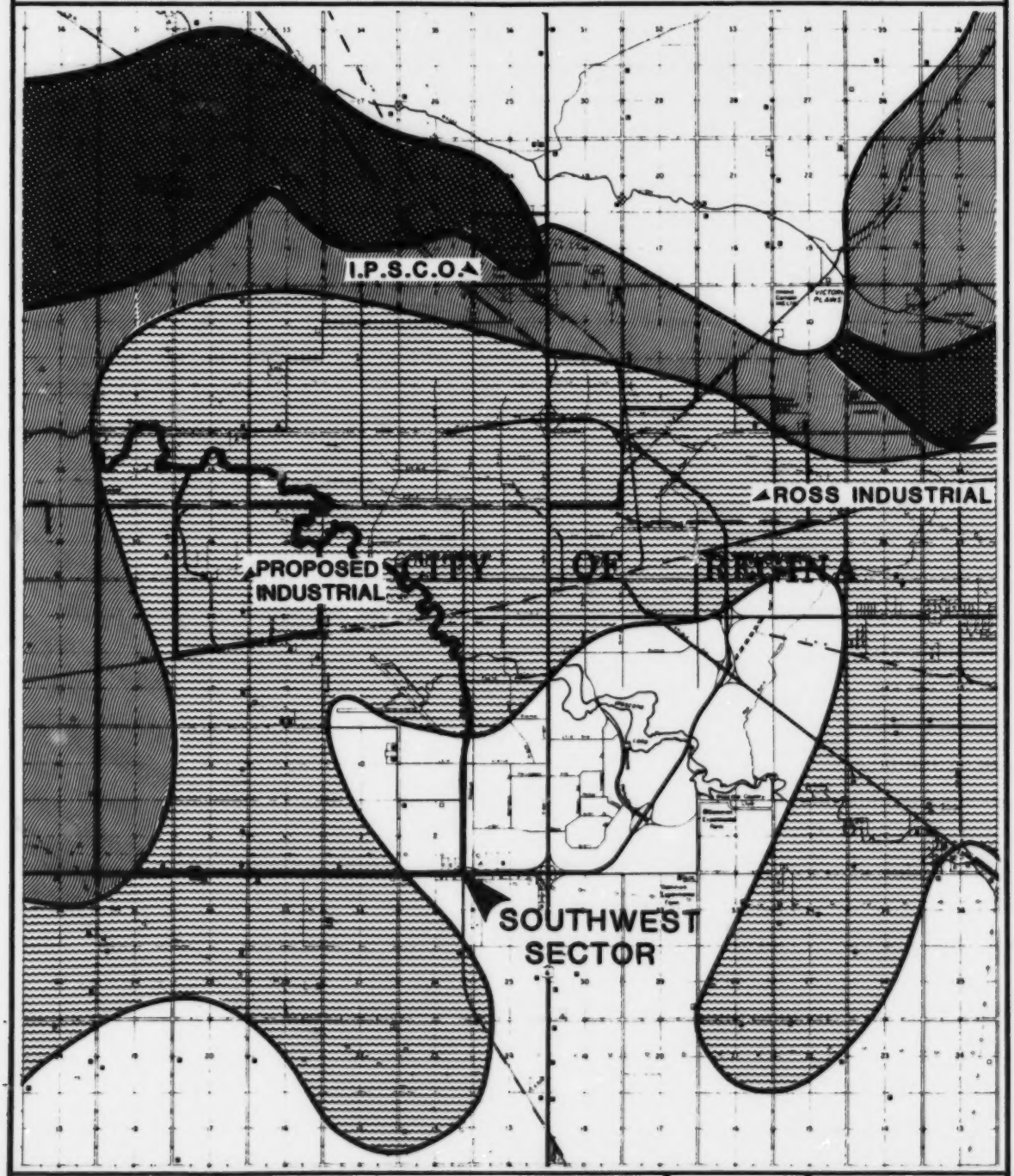
2.3.6 Other Land Uses

Other significant land uses in the area include institutional and government services (RCMP Training Depot and the Saskatchewan Boys' School) and recreational uses, as shown on Map 16. All are permanent uses which are not being considered for redevelopment or relocation.

2.3.7 Ownership Patterns

Map 19 shows the major property owners in the area. Lands in the northeast portion of the Sector are held by non-agricultural users - principally Transport Canada, the RCMP, City of Regina (sewage lagoons) and several industrial users. Agricultural land is owned by farm operators and by land holding companies who lease the land to tenant farmers.

MAP 20 AQUIFER SENSITIVITY TO CONTAMINATION



2.4 Environmental Factors

2.4.1 Sensitivity to Groundwater Contamination

Ground water is a significant source of drinking water in Regina. As such, care must be taken to minimize the risk of contaminating the Regina aquifer which supplies City wells.

Map 20 shows the area of the Regina aquifer, divided into zones of sensitivity for contamination from industrial and other urban activity. The Southwest Sector ranges from "fair" to "not sensitive", except for the most westerly portion, which is "moderately sensitive". Care should be taken in the development of potentially contaminating uses in the "fair" zone to ensure that seepage of contaminants into the aquifer cannot occur, and certain industrial uses should be restricted in the "moderate" zone.

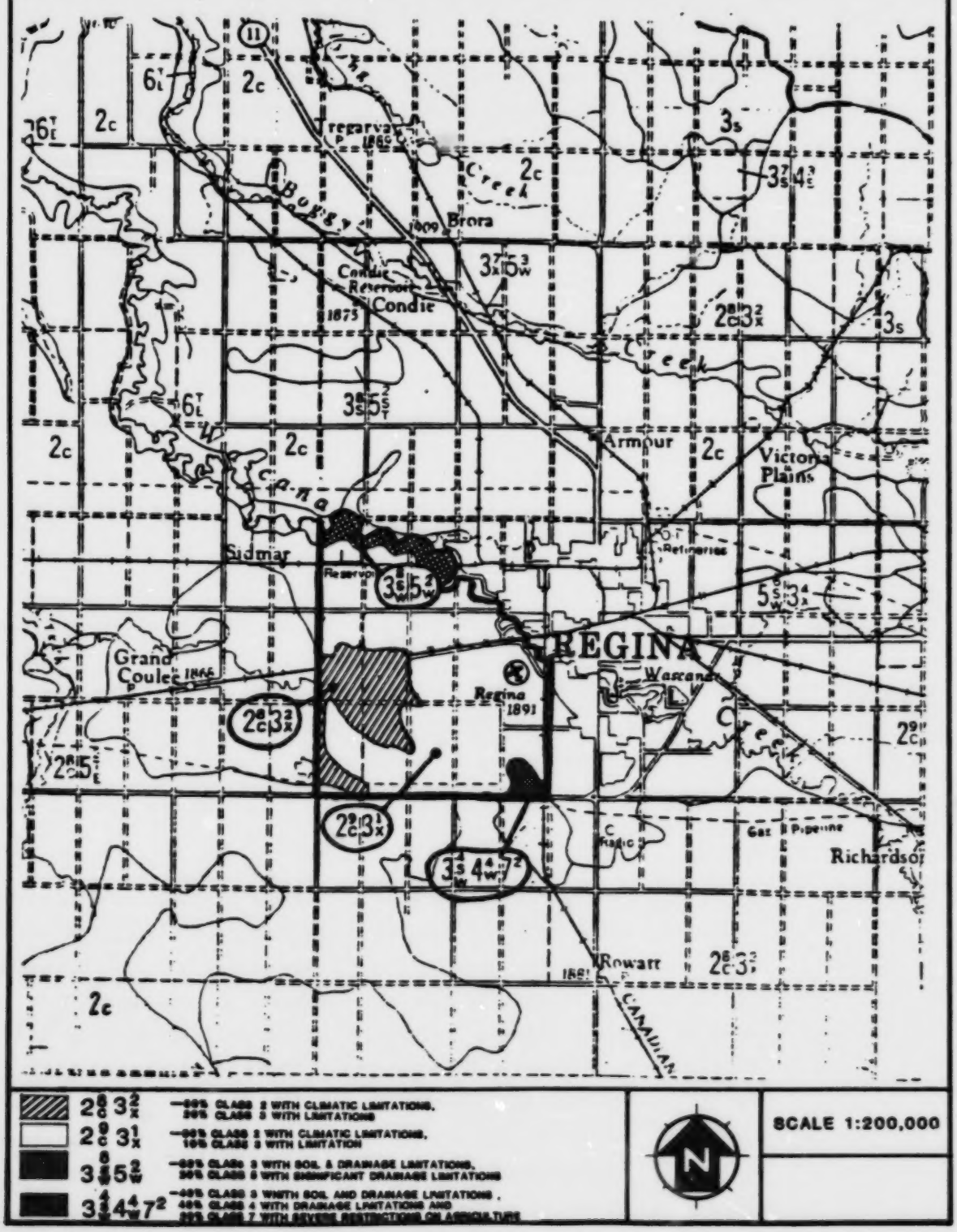
2.4.2 Capability for Agriculture

The land in the Southwest Sector is predominantly Class 2 Agricultural land, as is most of the land in the Regina Plain. Land thus classified has only minor constraints for agriculture. There are several smaller pockets of land along Wascana Creek, and one in the southeast corner of the Sector, which have more significant constraints for agriculture, due to drainage problems (see Map 21).

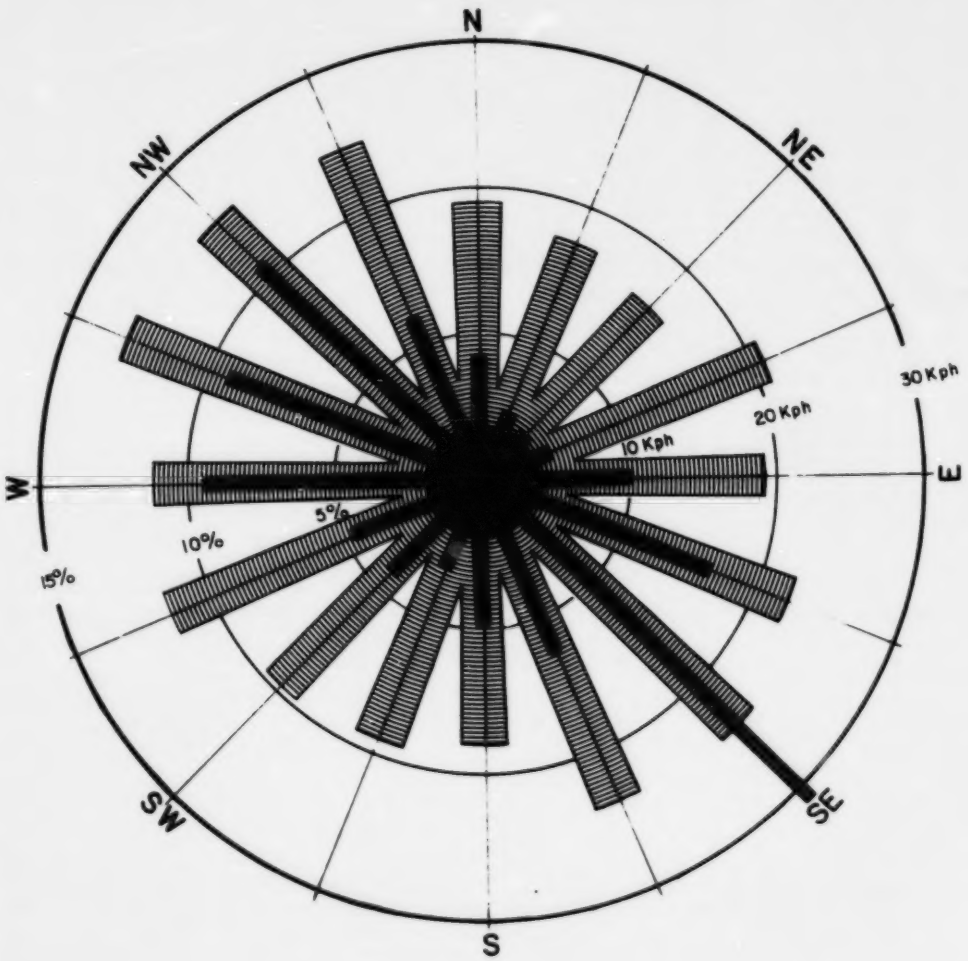
2.4.3 Wind

The predominant wind directions at the Regina airport are shown on Figure 22. Winds from the northwest and southeast directions are most prevalent and are also of the highest velocity. The calmest but most infrequent winds come from the northeast and southwest. Portions of the Southwest Sector are subject to frequent odor problems from the sewage lagoons which lie in the northwest corner of the Sector. Uses which generate smoke, dust or odor should be carefully considered in view of the impact they may have on airport visibility, and downwind impact on existing and possible future residential areas.

MAP21 CAPABILITY FOR AGRICULTURE



MAP 22 WIND AT REGINA AIRPORT*



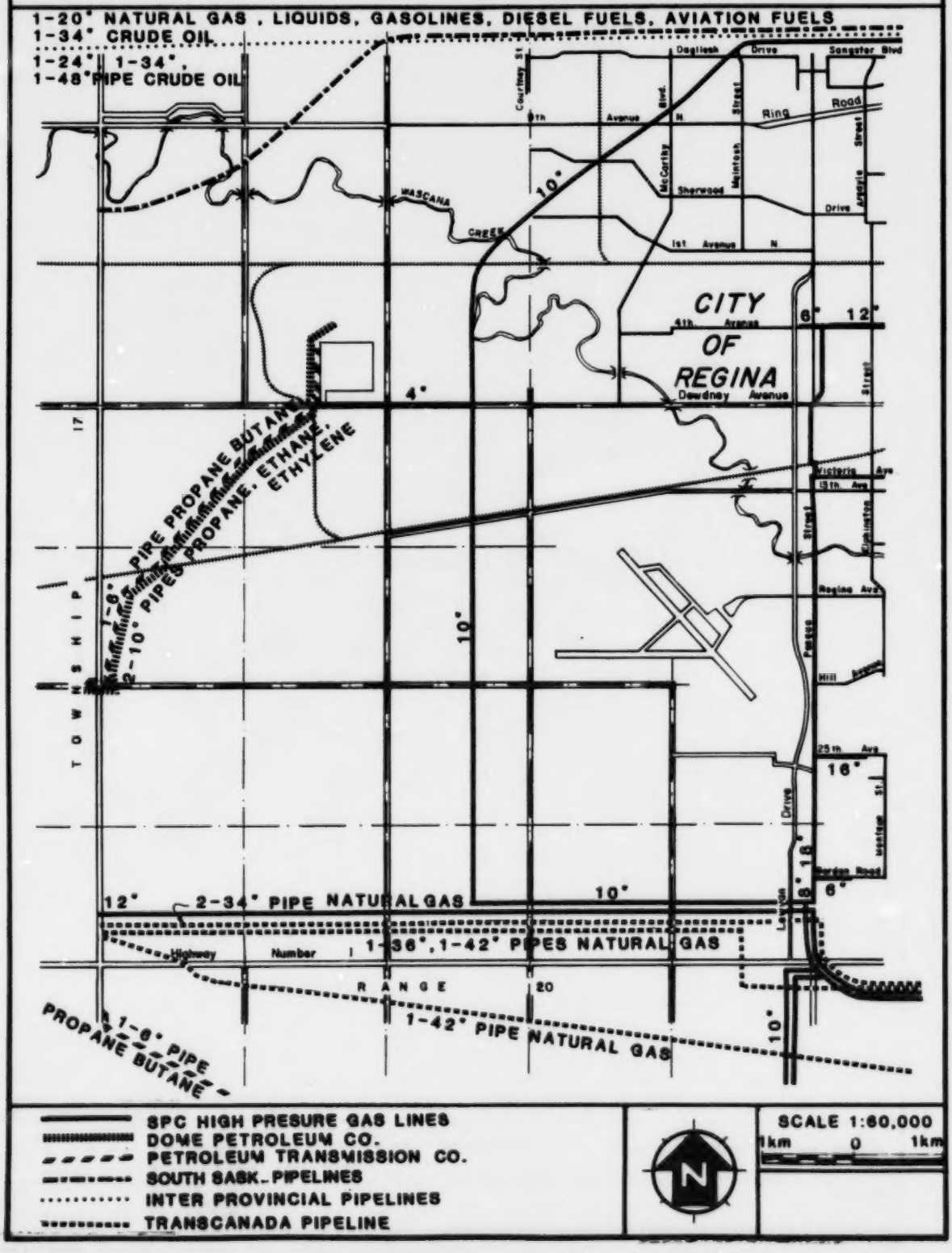
FREQUENCY OF WIND IN DIRECTION SHOWN (%)

VELOCITY OF WIND IN DIRECTION SHOWN (Kph)

* BASED ON ENVIRONMENT CANADA DATA 1955-1966

SOURCE: PEDESTRIAN LEVEL WIND STUDY FOR REGINA MHTR, 1984

MAP 23 PIPELINE CORRIDOR



2.4.4 Pipeline Corridors

Map 23 shows the pipelines which pass through the Southwest Sector. For safety reasons, residential development should be restricted within 50m (min.) of high pressure gas pipelines.

2.4.5 Other Environmental Factors

The Southwest Sector is subject to slope instability and flooding to a moderate extent. Care must be taken to ensure proper drainage and stabilization of slopes.

The area has a very low capability for recreation, being extremely flat with few natural features.

The subsoil is the highly plastic clay typical of the Lacustrine Plain in which Regina is situated. There is low ground water potential due to the thickness of the clay boundary, and there are small isolated occurrences of granular materials such as gravel or sand.

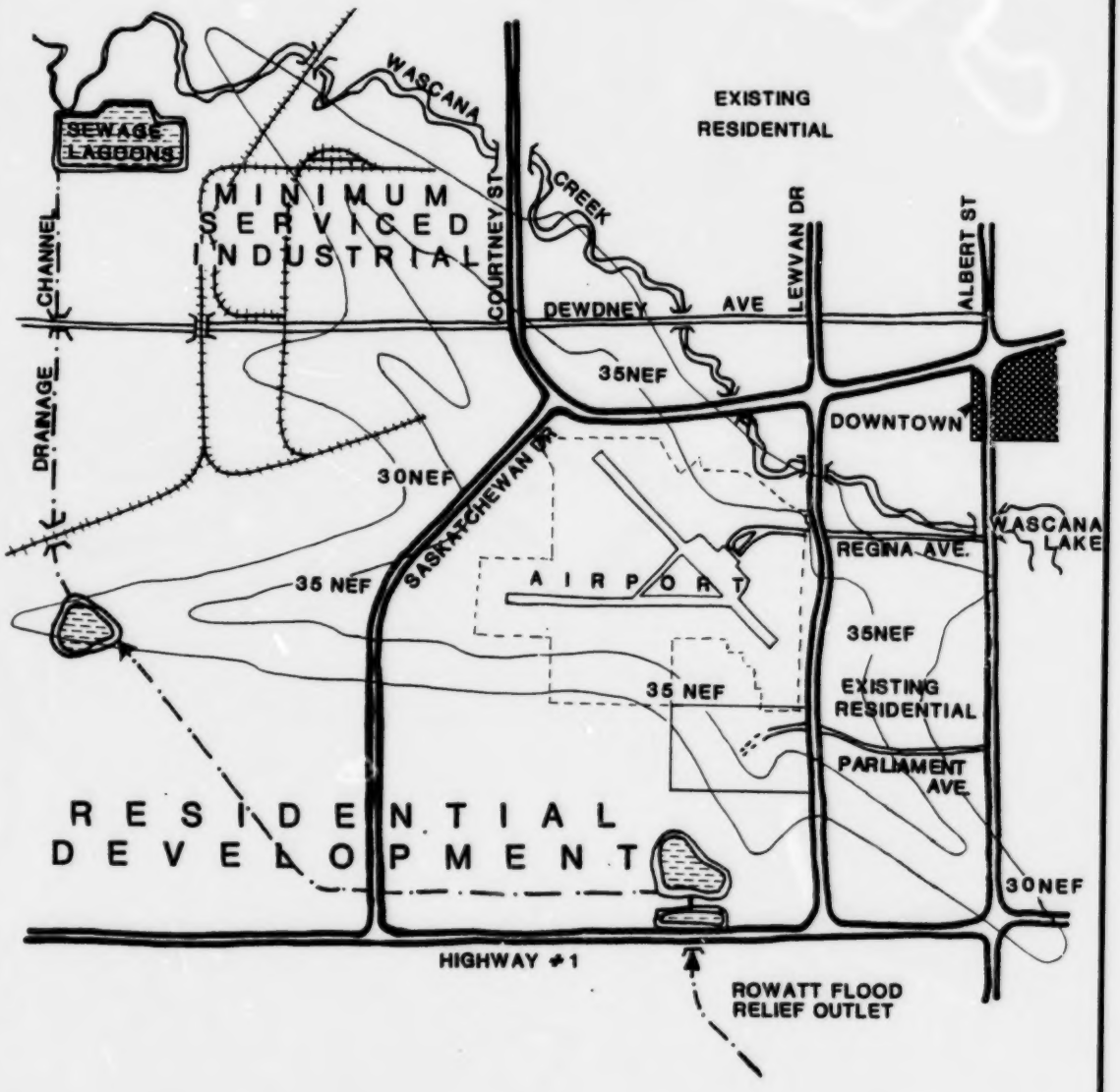
Other environmental factors include railway related noise and buffering and protection of the Wascana Creek Flood Plain. Development must conform to applicable city standards regarding noise attenuation and flood plain development. The issue of airport noise is dealt with in Section 2.2.2.

SECTION 3

DEVELOPMENT SCENARIOS

MAP 24

SCENARIO 1
URBAN DEVELOPMENT WITH AIRPORT REMAINING



3.0 DEVELOPMENT SCENARIOS

Three broad scenarios for long term (twenty years plus) development of the Southwest Sector can be considered. The first envisions an urban growth sector to accommodate expansion of the City, taking into account the ongoing operation of the airport at its current location. The second envisions relocation of the airport, which introduces a new set of opportunities for urban development. The third scenario is the non-development option - that the airport will remain, and the other land in the Sector will be maintained primarily for agricultural use.

Each of the above three scenarios will be discussed in turn.

3.1 Urban Development: Airport Remains

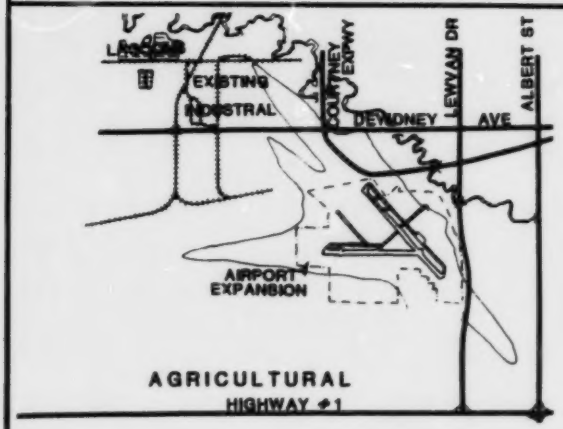
A reasonable scenario for growth of this Sector in the context of the airport remaining at its present location is shown on Map 24. It is based on the following premises:

a) Servicing will be via a new trunk line as shown on map 24 and as described in Section 2.1.1.

b) Roadways represent a logical extension of the existing roadway system - Dewdney Avenue, Saskatchewan Drive and Parliament Avenue.

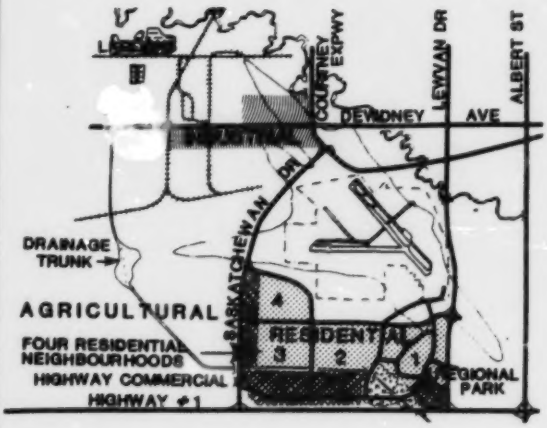
c) The lands southwest of the airport have few constraints for residential development, and could provide an opportunity to accommodate a westerly extension of the southern residential sector that includes Albert Park, Parliament Place, Hillsdale, and Whitmore Park.

MAP 25 SCENARIO 1: PHASING



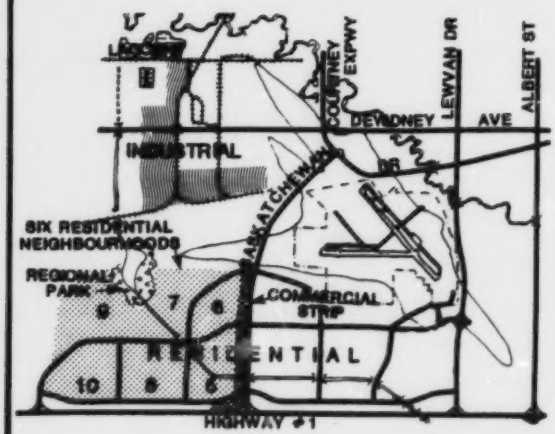
PHASE 1 PRE 2005

- Airport Expansion
- Rail Relocation
- Courtney Expwy link into Saskatchewan Drive
- Extension of Parliament Avenue



PHASE 2

- Southwest drainage trunk
- Extension of Gordon Rd and Parliament St. - Residential development south of the Airport (4 neighbourhoods)
- Possible airport related business or service uses in the area unavailable for residential development due to Airport noise impacts
- Infill industrial development east of Rail mainline
- Completion of Saskatchewan Drive to No. 1 Hwy
- Highway commercial along Hwy No. 1, MAC on Sask. Dr.



PHASE 3

- Continued westward development - industrial north of the rail mainline, residential south
- Grade separated crossings - Dewdney Ave. at Rail Mainline
- Residential expansion west of Sask. Drive

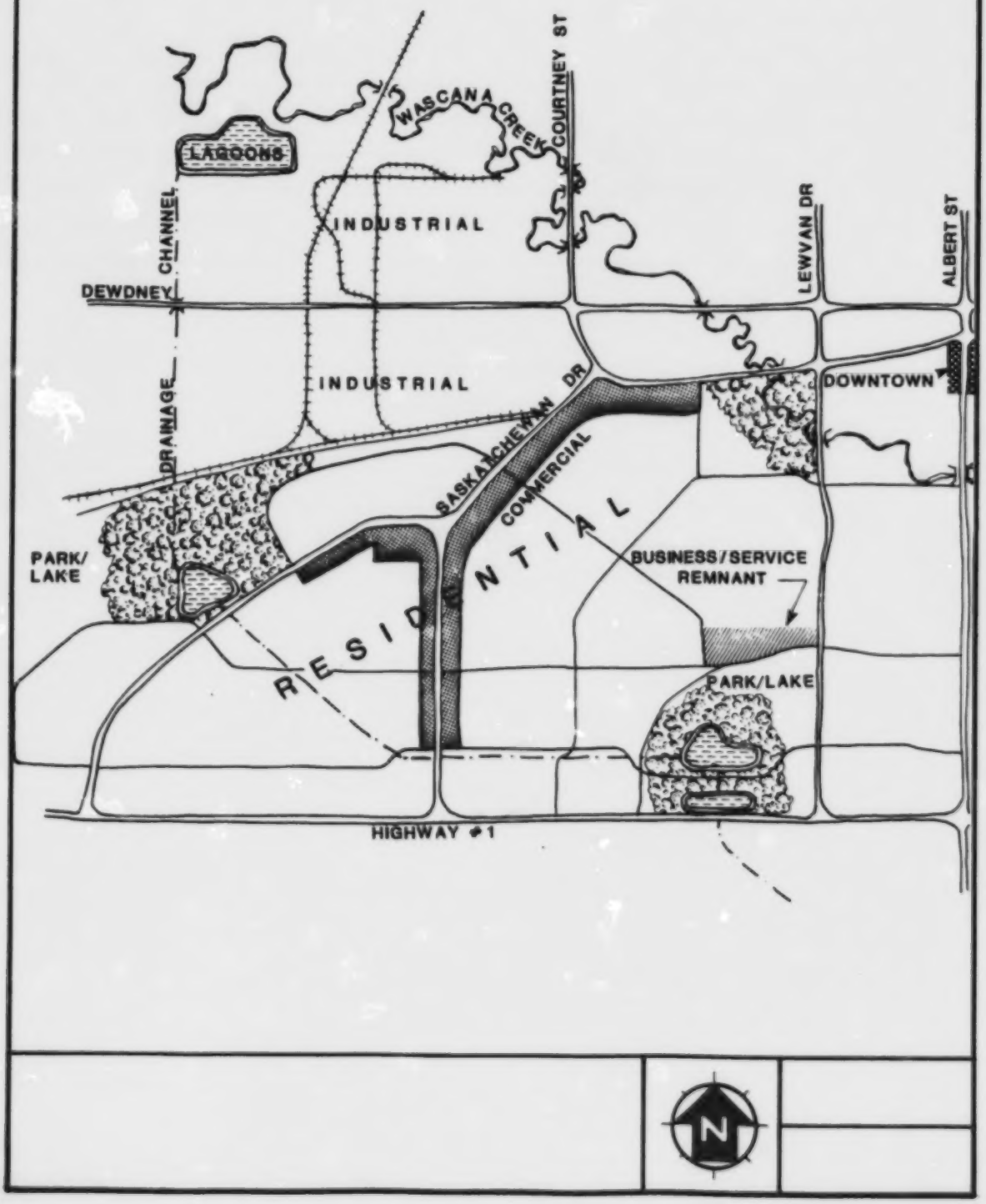
d) The lands to the west and northwest of the airport are constrained for residential development by airport noise, rail corridors, the sewage lagoons, and existing industrial uses such as Procor, Cominco, and Western Clay. Infilling of similar industrial uses is indicated.

e) Most of the residential development is conditional upon the development of the Southwest Drainage Trunk which will not occur until the Northwest and Southeast Sectors are approaching saturation levels and growth can be focused in the southwest. This will enable the expenditure on the drainage system to be capitalized as quickly as possible after it is completed.

f) Land lying within the 35 NEF contour south of the airport is unavailable for residential use, but must interface sensitively with the residential neighbourhoods which it abuts. Land lying between the 30 and 35 NEF contours may also not be open for residential development unless standards which are consistent with CMHC criteria for residential development in the vicinity of airports are adopted. These areas include Westridge, and will be discussed in more detail in Section 6.1.

MAP 26

SCENARIO 2
URBAN DEVELOPMENT WITH AIRPORT RELOCATED



3.2 Urban Development: Airport Relocated

This scenario is shown on Map 26. All elements are identical to those described in Section 3.1 above, with two exceptions:

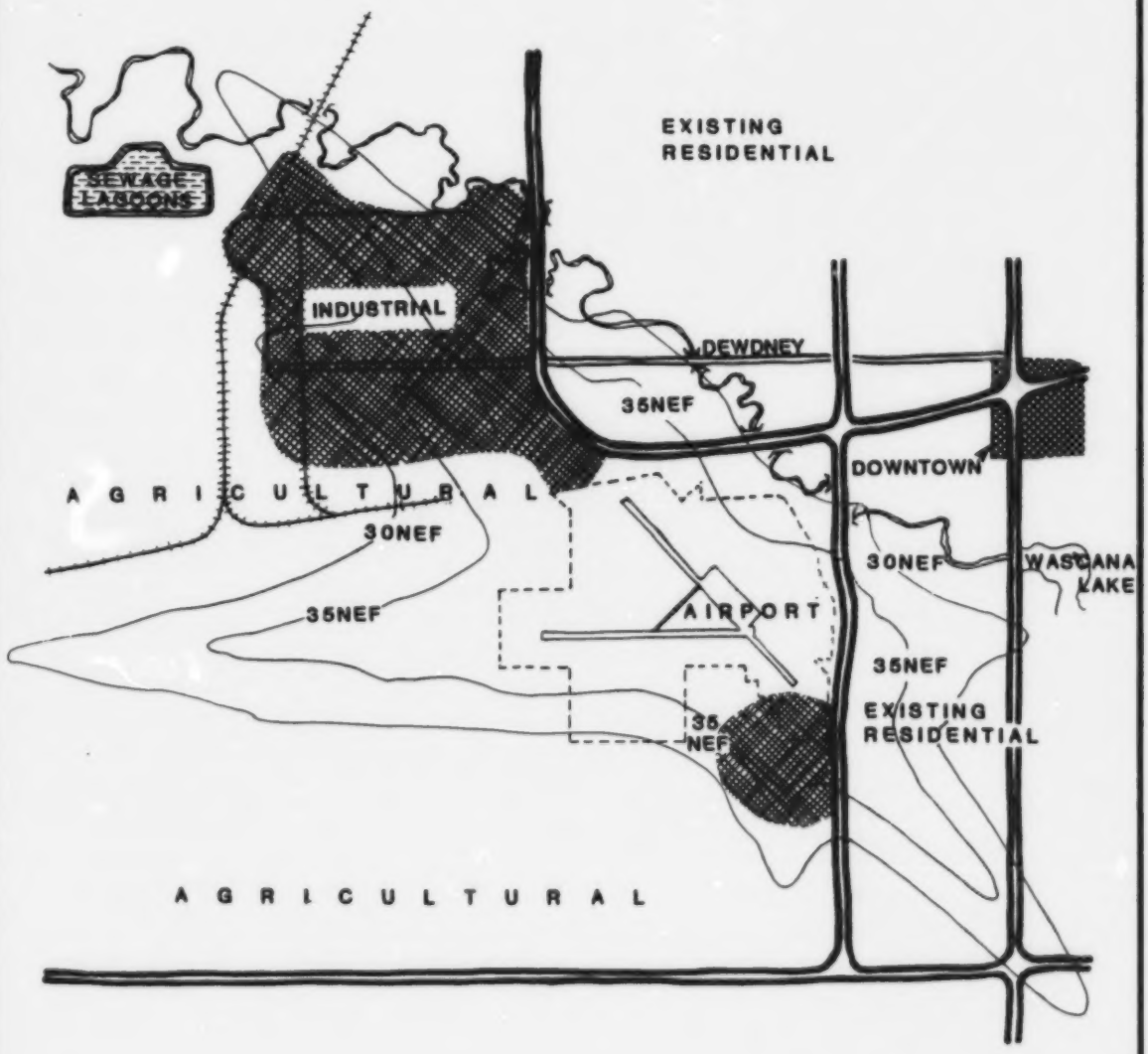
a) Accepting that the airport may at some future time be relocated, residential development extends across the airport lands.

b) Extra attention must be given to areas now within the 35 NEF contour to ensure that they can be incorporated into a potential future residential district.

It should be noted that the above is not meant to imply that the airport is expected to be relocated in the future. The purpose of this scenario is to show only that development can be accommodated if the airport is ever relocated; the plan does not depend on the airport remaining.

MAP 27

SCENARIO 3
NO URBAN DEVELOPMENT



POSSIBLE AREA OF LIMITED SERVICE INDUSTRIAL DEVELOPMENT

N

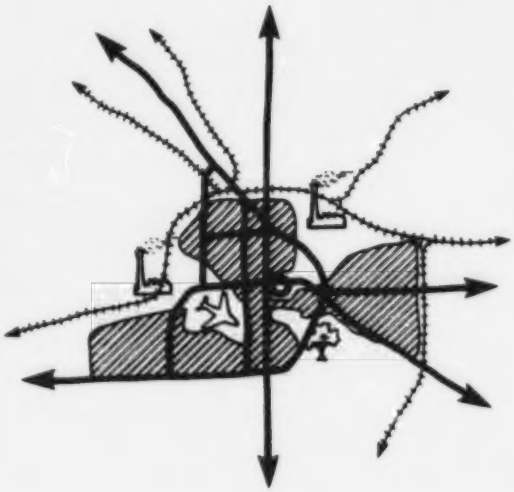
3.3 No Urban Development

This scenario does not accommodate major urban development of the Southwest Sector. It provides the maximum flexibility for future airport development. The majority of the study area would remain agricultural, but future opportunities for certain industrial, recreational or other similar uses which require limited services or can utilize existing service capacities, can be considered (see Map 27). However, residential development would be limited in size by existing servicing capacity to an extent that the establishment of one complete neighbourhood is unlikely. Consequently, residential use would not be viable under this scenario.

SECTION 4

EVALUATION OF IMPACTS

MAP 28 OVERAL URBAN FORM

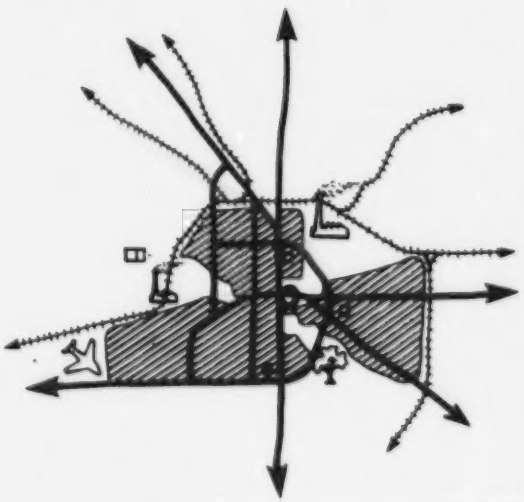


SCENARIO 1:

URBAN DEVELOPMENT
OF THE SOUTHWEST SECTOR,
AIRPORT REMAINS

SCENARIO 2:

URBAN DEVELOPMENT
OF THE SOUTHWEST SECTOR,
AIRPORT RELOCATED



N

4.0 EVALUATION OF IMPACTS

In the previous sections, a number of factors regarding the ability of the sector to be developed were reviewed, and several different scenarios of the form which development may take were generated. It has been established that development of the sector is feasible. It is now necessary to evaluate whether such development is desirable in the context of the overall growth of the City.

4.1 Residential Growth Pattern

4.1.1 Population Growth

The population of Regina is expected to increase from its 1986 level of 175,000 to almost 250,000 in the next 25 years. Well before that time, the existing reserve of land for residential development in the southeast and northwest sectors of the City will be exhausted. Even with infill development of the CNR and CPR rail yards, new areas will need to be opened up to meet the demand for land created by the ongoing growth of the city.

Long term growth may be influenced by unexpected economic, demographic, technological or environmental changes. However, for the purposes of this exercise, current trends are assumed to be continued leading to a situation of continued growth.

4.1.2 Urban Form

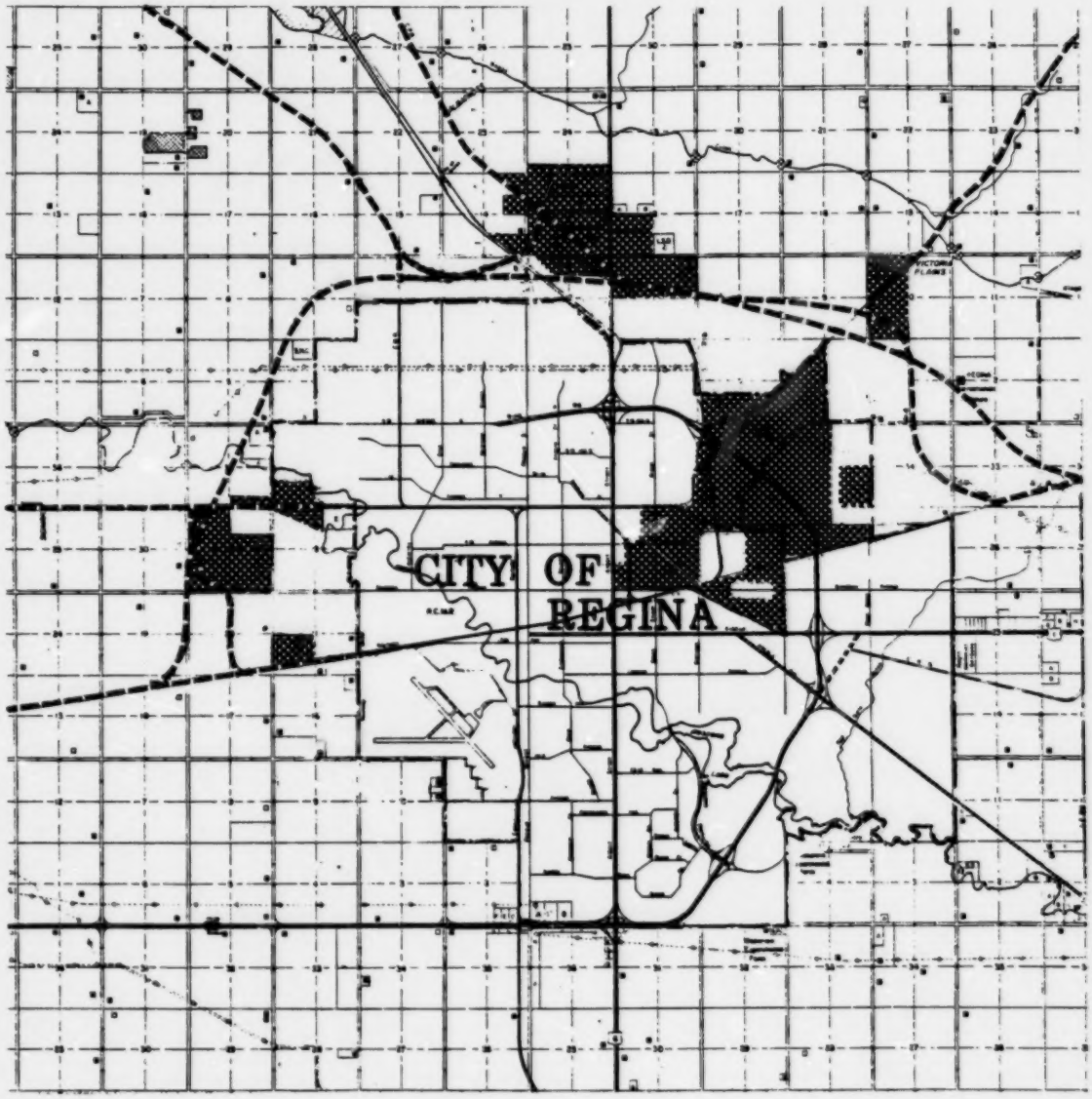
Map 28 illustrates the resulting growth pattern for the two urban development scanarios outlined in the previous section. It shows the city evolving in a form characterized by three residential lobes circumscribing the city core, separated from each other by park, industrial and airport precincts or "wedges". This form closely resembles the classic sector model identified by urban geographers as the theoretical shape most cities evolve towards. Residential development of the Southwest Sector can be seen as a logical progression in the evolving urban form of Regina.

4.1.3 Alternative Growth Options

The southwest sector is one of several candidates for development to accommodate the long term growth of the city.

A comprehensive study of long term growth options will be undertaken in 1987-88. It will examine in detail the long term growth prospects for the city and discuss and evaluate the various scenarios. The indication of this review is that the southwest sector should be considered a feasible option for long term residential growth. In view of this conclusion, it is prudent to maintain the options for long term residential growth in the southwest sector.

MAP 29 INDUSTRIAL DEVELOPMENT



EXISTING INDUSTRIAL LAND (20 years supply)

N

4.2 Industrial Development

The existing ongoing industrial uses and the opportunity for infilling of similar uses, especially with the advent of rail relocation, virtually ensures that a significant industrial presence will be maintained in the southwest sector. This presence was not reflected in the 1979 Industrial Development Strategy, the document which recommended that industrial development be restricted to Ross Industrial Park as the principal industrial area and to the North Regina Industrial Subdivision (NRIS) (see Map 29). Continued industrial growth in the southwest sector would depart from that direction.

There is sufficient land in Ross Industrial Park and NRIS to accommodate expected industrial demand for the next 20 years. Map 30 shows the location of existing and potential future industrial land in the southwest sector. In view of the investment in infrastructure which has been made in Ross Industrial Park, it is appropriate to complete the development of this area before significant expansion of industrial lands in the southwest is considered.

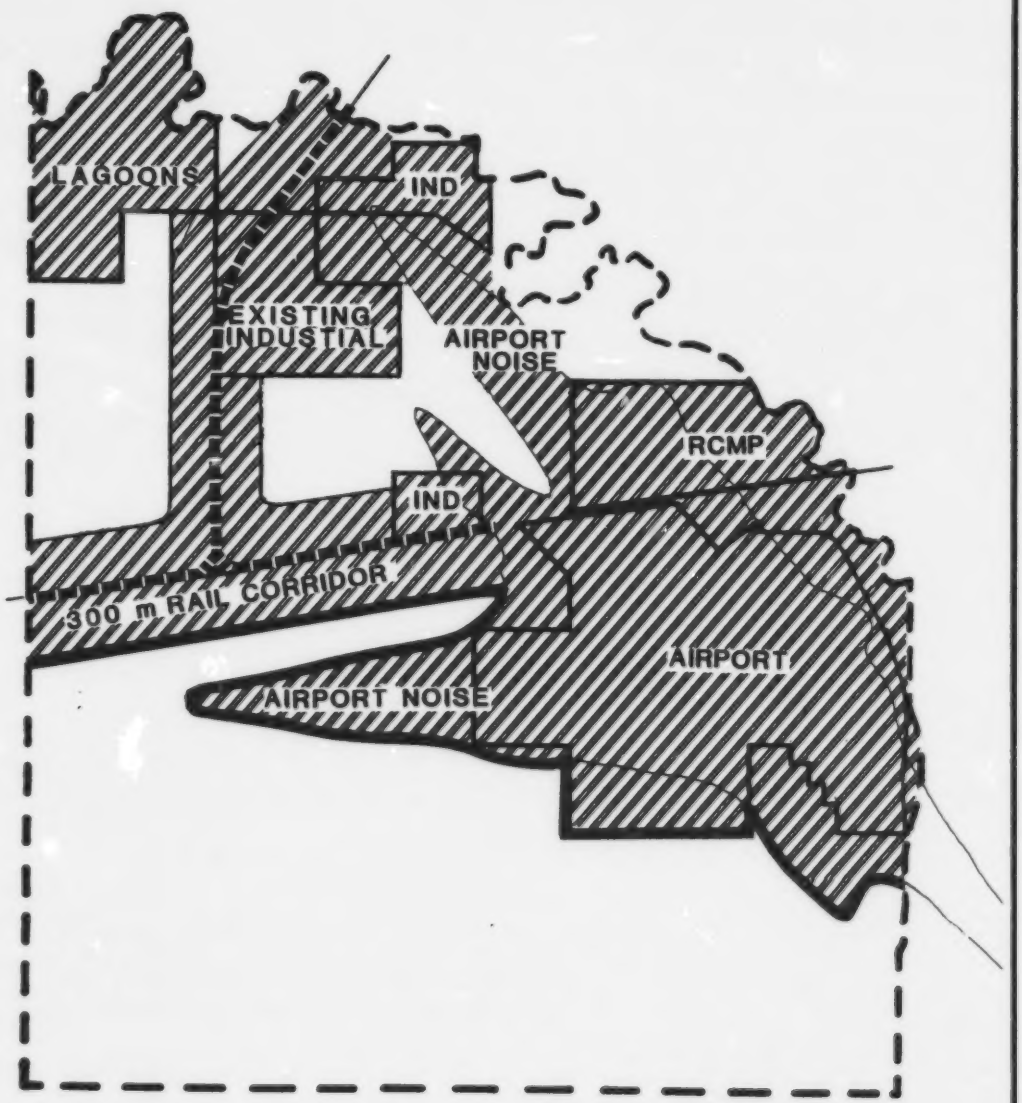
In the longer term, however, industrial development in the southwest sector may be appropriate for the following reasons:

i) there will be a need for new areas for industrial development once Ross Industrial Park has reached the limits of its servicing capacity.

ii) the southwest sector is in proximity to the airport, relocated rail corridor and is equidistant from Highway 11 and Highway 1 west, both of which can be reached without passing through the city core.

iii) the dispersion of industrial employment to the southwest will help even out traffic patterns at peak hour periods.

MAP 30 NON RESIDENTIAL DEVELOPMENT



EXISTING AND PLANNED LONG TERM NON-RESIDENTIAL USES/CONSTRAINTS TO RESIDENTIAL DEVELOPMENT

N

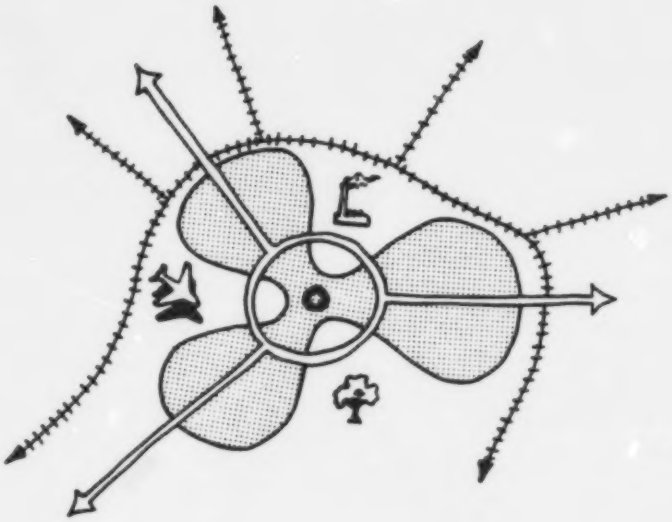
iv) the land is less environmentally sensitive than NRIS or an extension of Ross beyond the new rail yards (potential contamination of the aquifer).

v) servicing in a portion of the area can be readily accommodated and the remainder can be serviced by the construction of a southwest drainage channel discussed in Section 2.2.1.

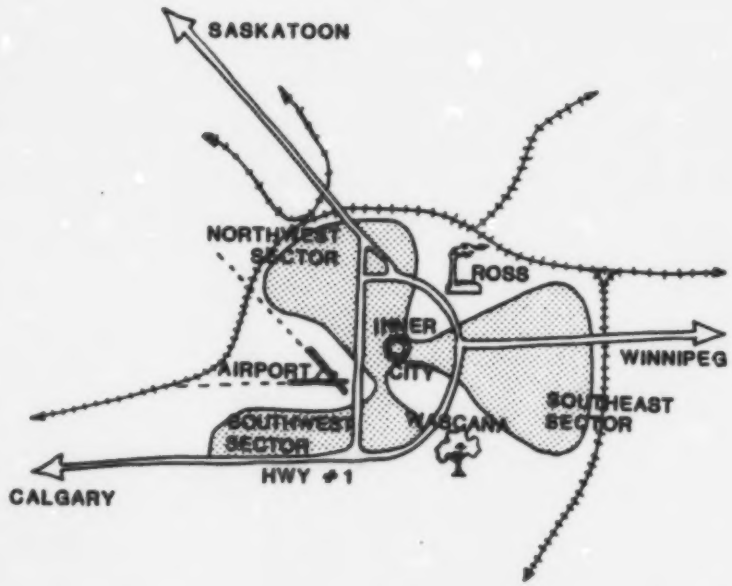
vi) the land is unavailable for residential development due to airport noise impacts, sewage lagoons, rail noise and existing industrial development.

There is a short term issue involving the development of Westridge Business Park, which will be discussed further in Section 6.1.

MAP 31 SECTORAL CITY



CONCEPTUAL MODEL



REGINA
WITH SOUTHWEST SECTOR

4.3 Transportation System

4.3.1 Roads

Map 31 shows a conceptual sectoral city model as compared to the form of Regina with the development of the southwest sector, illustrating that the development of the southwest sector would be consistent with the overall land use and transportation pattern which has already been established.

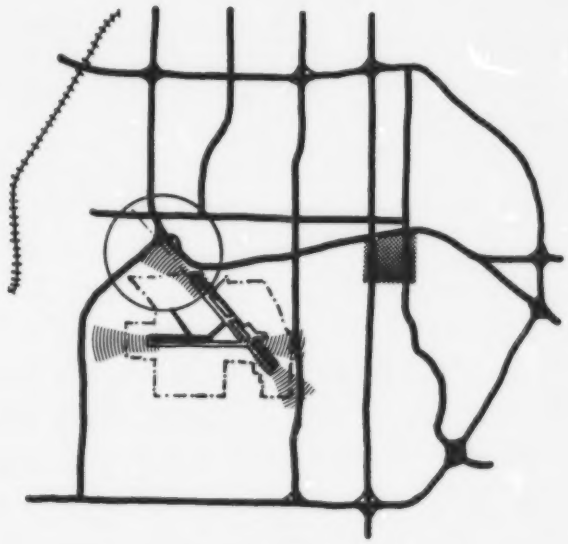
Of critical importance is the network of roadways connecting to the core. Access to the downtown for southwest sector residents would be via Albert Street South, Saskatchewan Drive or Dewdney Avenue. It is expected that most of the traffic could be directed to Saskatchewan Drive which should be designed to accommodate the expected volumes. An extension of Saskatchewan Drive west of the Ring Road (Lewvan Drive) directly into the southwest sector as shown on Map 32 would enhance its attraction. This extension also ties in with the proposed Courtney Street Expressway which will serve the northwest sector.

4.3.2 Air Transportation

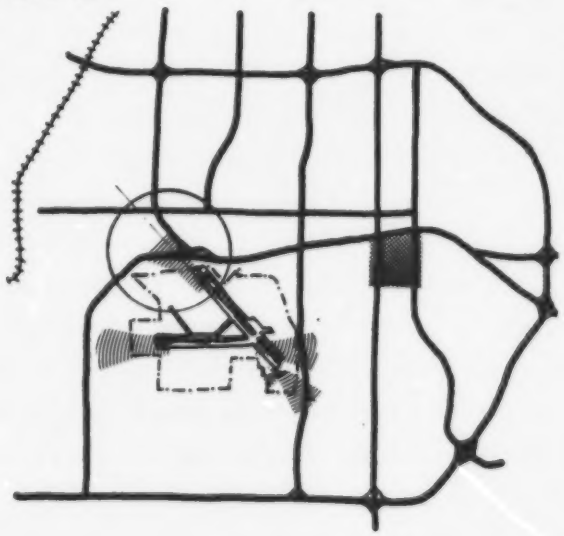
Development of the southwest sector as described in Section 3.1, the urban development scenario which retains the airport at its current location, will enable airport operations to continue unimpeded. As map 33 shows, the extent of new residential development in areas affected by airport noise is very minimal in areas where the noise impacts are not great, and is non-existant in areas where noise impacts are more severe. This analysis is based on the assumption of the City policy being relaxed to permit residential development between the 30 and 35 NEF contours as per CMHC criteria (e.g. requires noise insulation). In the event of the existing City policy being retained and no residential development being permitted within the 30 NEF contour, there will be no residential development in areas adversely affected by airport noise. All proposed navigation aids are well protected and other impacts such as bird attractions are adequately dealt with.

MAP 32 SASKATCHEWAN DR. & COURTNEY EXPWY.

ALTERNATIVE #1



ALTERNATIVE #2



MAP 33 AIRPORT NOISE IMPACTS

EXISTING AREAS OF DETACHED DWELLINGS PROFUNDLY AFFECTED BY BY AIRPORT NOISE

EXISTING AREAS OF DETACHED DWELLINGS MODERATELY AFFECTED BY AIRPORT NOISE

POTENTIAL NEW AREAS OF DETACHED DWELLINGS MODERATELY AFFECTED BY AIRPORT NOISE

N

SCALE 1:60,000

1km 0 1km

Future very long term development options for the airport are limited, to the extent that the options for a second parallel runway configuration would be eliminated. However, the current airfield development will accommodate the B767ER aircraft which has direct flight trans-atlantic capability. Aviation technology appears to be progressing to develop aircraft which can operate on shorter runways. Consequently, the prospect that an extremely long runway (which the second parallel runway scenario would provide) will be needed in Regina appears to have been eliminated. In the event of a major but unforeseen change in aviation technology in the long term, which could not coexist with the surrounding development, consideration could be given at such time to relocating the airport. In view of the impact of the airport on the existing Albert Park and Parliament Place subdivisions, relocation may be valid under these circumstances whether or not the southwest sector is developed.

4.3.3 Rail Relocation

The City's rail relocation programme will create a new rail corridor in the Southwest sector through the area identified as potential industrial development in all three development scenarios described in Section 3.0. Industrial land use is compatible with the proposed rail corridor and the proximity to rail transportation provides the opportunity for a wide range of industrial uses that use rail transportation to locate there.

Development of the southwest sector would direct future residential growth to the area within the rail corridor and is therefore consistent with the aims and objectives of rail relocation.

SECTION 5

GENERAL CONCLUSIONS

5.0 GENERAL CONCLUSIONS

5.1 Development Capability

The southwest sector can be developed for urban uses including residential development in the southern portion, and industrial uses in the north.

5.1.1 Services

Urban services can be provided at a cost that may be marginally higher than other areas which can more readily utilize natural drainage courses. Water, roads and utilities present no significant problems or cost differences. (see Section 2.1)

5.1.2 Airport Noise

Airport noise restricts residential development in the area west and northwest of the airport. Areas southwest of the airport are largely unaffected by airport noise. Evaluation should be made of the noise impacts on areas marginally affected by noise to determine appropriate standards at the time development is pending.

5.1.3 Adjacent Land Uses

Several large industrial uses, the airport and the sewage lagoons constrain residential development in the northern portion of the study area. (see Section 2.3)

5.1.4 Environmental Issues

Environmental issues can be resolved by appropriate safeguards. (see Section 2.4)

5.2 Development Options

The major development options involve establishing the area as an urban growth sector or retaining it as a non urban area.

5.2.1 Urban Growth Sector: Airport Remains

The general form of development of the area, if established as an urban growth sector, is dictated by the development capability - residential development in the southern portion and industrial development in the north. (see Section 3.1)

5.2.2 Urban Growth Sector: Airport Relocated

A variation on 5.2.1 demonstrates that development on the airport site can be integrated into the plan in the eventuality of the airport being relocated at some future time. (see Section 3.2)

5.2.3 No Urban Development

The area can remain largely agricultural, but has an immediate potential for low service industrial uses and non-residential development in certain areas which are easily servicable. (see Section 3.3).

5.3 Evaluation of Development Options

The southwest sector appears to present an attractive opportunity to accommodate the long term growth of the city beyond the current 20 year planning horizon.

5.3.1 Population Growth

There is approximately 20 years supply of land in the northwest and southeast sectors, beyond which time expected urban growth in Regina will lead to a demand for new areas for development. (see Section 4.1)

5.3.2 Residential Form

Residential development of the southwest sector represents a continuation of the tri-lobed sector pattern of residential growth of the city. (see Section 4.1)

5.3.3 Long Term Growth Options

The evaluation of long term growth options, including the Southwest Sector, will be undertaken in 1987/88.

5.3.4 Industrial Development

Given the investment in infrastructure which has been made in Ross Industrial Park, it is warranted to limit extensive industrial development in the southwest sector at the present time. In the longer term, when land reserves in Ross are exhausted, the southwest sector offers a good potential to accommodate continued industrial growth. This can be accommodated regardless of whether residential development is also directed to the southwest. (see Section 4.2)

5.3.5 Transportation

The various transportation networks can readily be made to accommodate urban development of the southwest sector, but can equally be suited to a non-urban growth scenario. The airport expansion option which involves the development of a second parallel runway is constrained by urban development in the sector, but this is seen as being a technologically obsolete option. Urban development reinforces rail relocation by helping to contain city growth within the rail corridor. (See Section 4.3)

5.4 Summary Conclusion

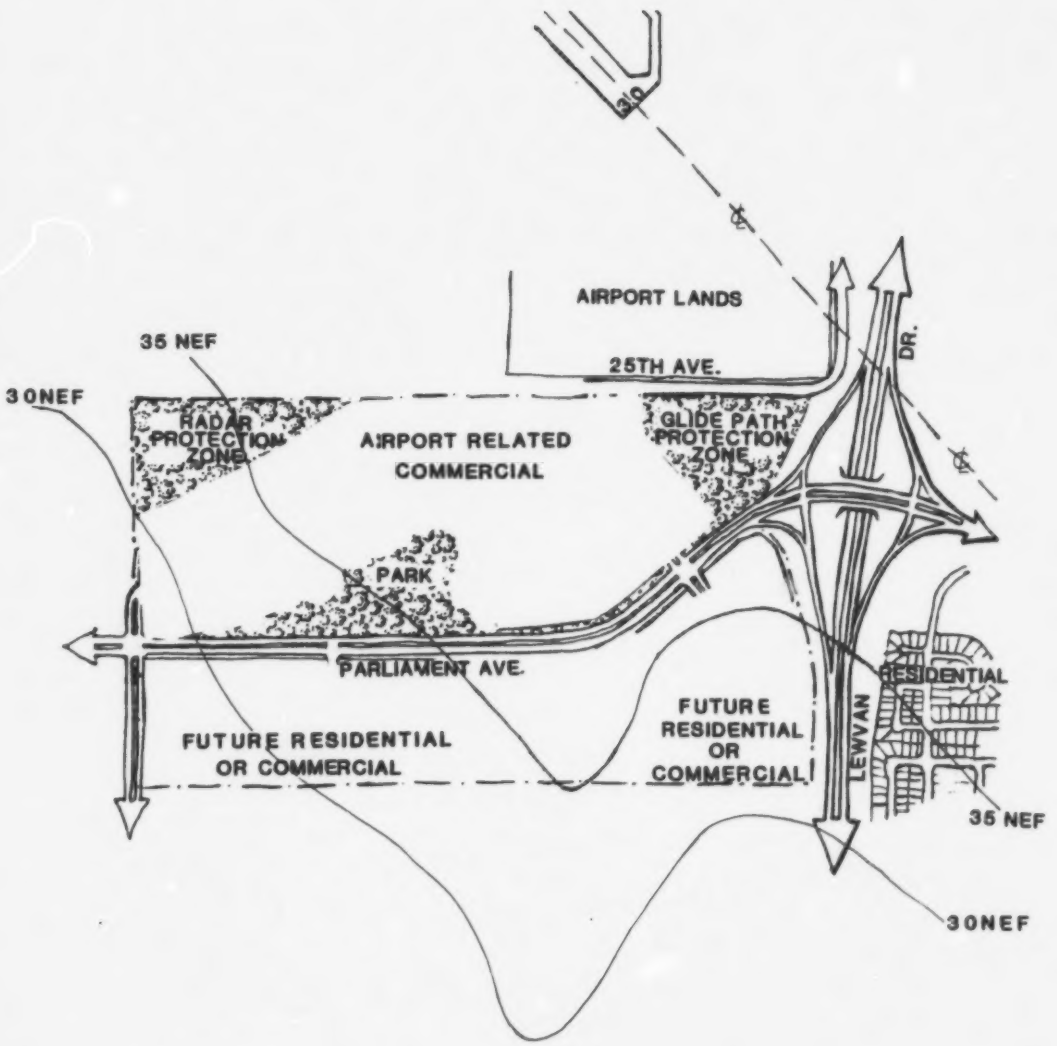
The southwest sector has the potential to accommodate urban development and is a viable candidate to accommodate residential and industrial growth beyond the current 20 year planning horizon. In view of this conclusion, it is prudent to consider the impact of various short term development decisions on the long term prospects for the area in order to protect the options for its future development.

The implications of this conclusion on the various short term decisions which are anticipated to be before the City are discussed in Section 6.0.

SECTION 6

SHORT TERM IMPLICATIONS

MAP34 WESTRIDGE SUBDIVISION
POSSIBLE LONG RANGE CONCEP PLAN



6.0 SHORT TERM IMPLICATIONS

6.1 Westridge Subdivision

There are a number of implications of the future development of the southwest sector which affect the proposed Westridge Business Park Subdivision.

6.1.1 Extent of Development

There are two factors which suggest that the extent of industrial development in Westridge should be limited: it may affect the rate of development in Ross Industrial Park where large investments in infrastructure have already been made, and it may conflict with future residential development in the vicinity. Therefore, significant industrial development should not be encouraged until lands in Ross Industrial Park is nearing saturation. Industrial uses should be limited primarily to the area unavailable for future residential development due to airport noise impacts. Expansion of industrial uses to the rest of the site may occur if residential development of the sector is not being pursued. It may also occur if current City policy which does not permit residential development inside the 30 NEF contour is retained. The alternative is to adopt CMHC criteria which would permit noise insulated residential development between the 30 and 35 NEF contours.

6.1.2 Form of Development

The design of Westridge should provide for an appropriate interface between residential and industrial development if both are being pursued in the area. Map 34 shows a concept plan which is premised on CMHC standards for noise insulated residential development being permitted between the 30 and 35 NEF contours and which has the following attributes:

i) the industrial lands are separated from future residential development by Parliament Avenue which may be developed as a divided arterial roadway providing access to Lewvan Drive.

ii) Parliament Avenue does not have industrial frontage - a bufferstrip separates the roadway from the back of industrial lots.

iii) park area can be used to provide, to the greatest extent possible, separation of the industrial lots from Parliament Avenue. Where lots back onto the bufferstrip abutting Parliament Avenue, non-residential uses such as parks, churches and shopping can be developed abutting Parliament Avenue to the south. Only these types of non-residential uses may be developed on lands lying within the 35 NEF contour south of Parliament Avenue.

iv) no development occurs in areas where it may interfere with the airport's electronic navigation aids.

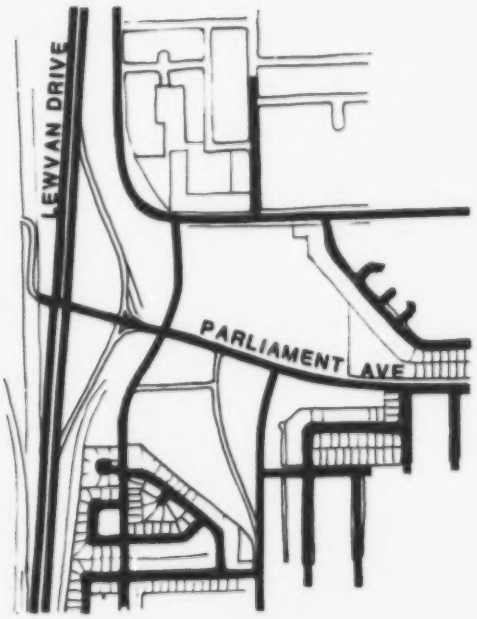
v) direct access to the airport utilizing 25th Avenue is provided

6.1.3 Range of Uses

Consideration may be given to establishing zoning which limits the range of uses permitted in Westridge to those which may reasonably be related to the airport or extensively require air transportation services. Essentially, the type of uses which could be considered include offices and warehouseing. Other industries should be encouraged to locate in extension of Ross Industrial Park or new industrial areas west of the airport.

It should be noted that additional opportunities for airport related industrial uses have been proposed on approximately 50 acres of the airport site, as prescribed in the Airport Master Plan.

MAP 36 PARLIAMENT AVENUE EXTENSION



6.2 Parliament Avenue Extension

The design of Lewvan Drive has made allowance for a future grade separated interchange to accommodate the planned extension of Parliament Avenue. This project is now proceeding through the design process. Concerns expressed by area residents include the increase of traffic on Parliament Avenue and the uncertainty regarding the future development west of Lewvan Drive which may generate further traffic on Parliament Avenue. Map 36 shows the current proposal which has the following attributes:

i) allows ease of access between Lewvan Drive to the major collectors in the area - Parliament Avenue, 25th Avenue, Pasqua Street, Queen Street and Montague Street. Substantial savings are expected to accrue to affected road uses.

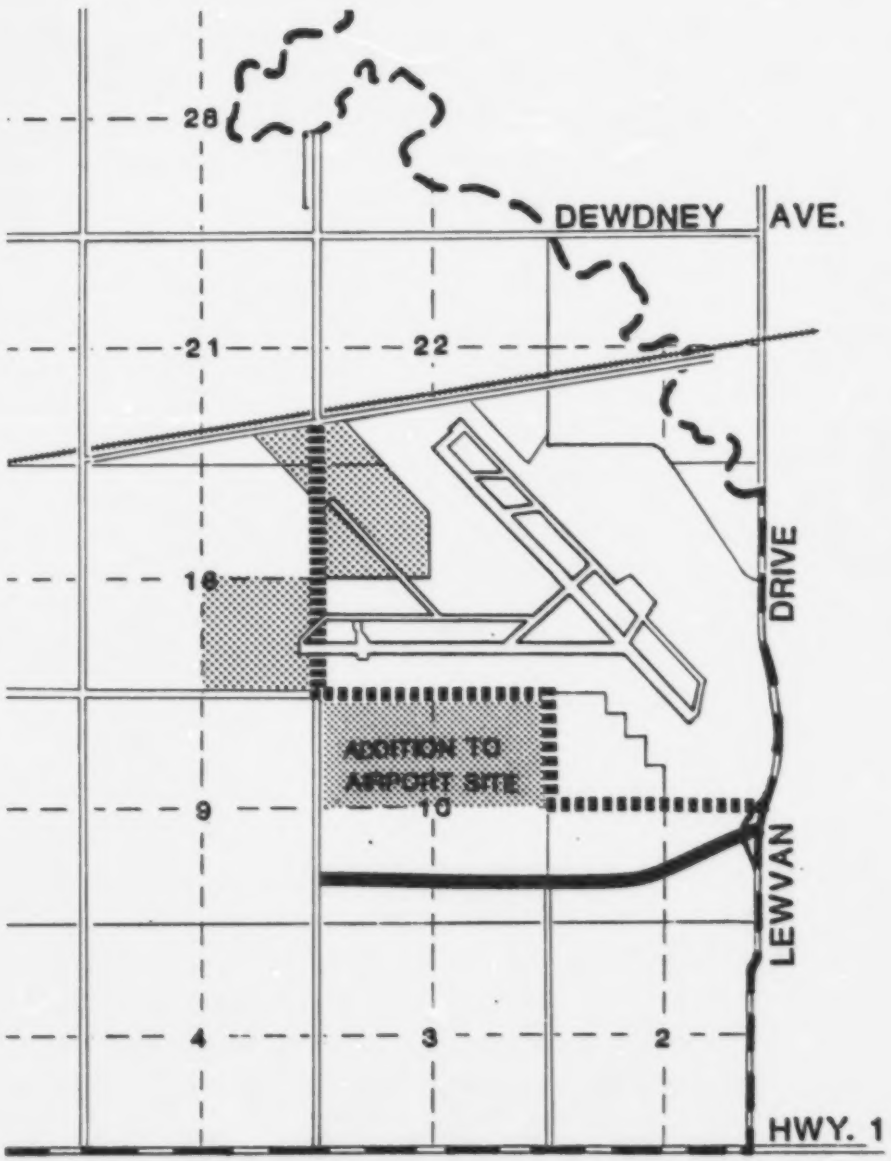
ii) traffic volumes on several local streets will be reduced, but will increase on Parliament Avenue.

iii) a large open space parcel intended to be used for rugby pitches is provided.

iv) the project can be phased in as appropriate.

Development of the southwest sector would probably necessitate development of the grade separated interchange at Lewvan Drive and Parliament Avenue, which the plan provides for. Further increase of traffic on Parliament Avenue between Lewvan Drive and Albert Street is possible and measures to mitigate any adverse impact on existing residents should be considered.

MAP 38 ROAD REALIGNMENTS



NEW ROADS

ROAD CLOSURES

N

6.3 Airport Expansion

There are a number of shorter term implications of the recently adopted Airport Master Plan which warrant a response by the City. These are described in the following sections.

6.3.1 Airport Noise Contours

The Regina Airport Master Plan provides for the extension of existing runways and the development of a new parallel small aircraft runway. The resulting noise exposure forecasts should be appropriately reflected in the Development Plan to ensure that applicable standards for residential development are applied. Currently, the Development Plan reflects the noise exposure forecasts for the existing airfield configuration and the earlier planned "second parellel runway" airfield configuration.

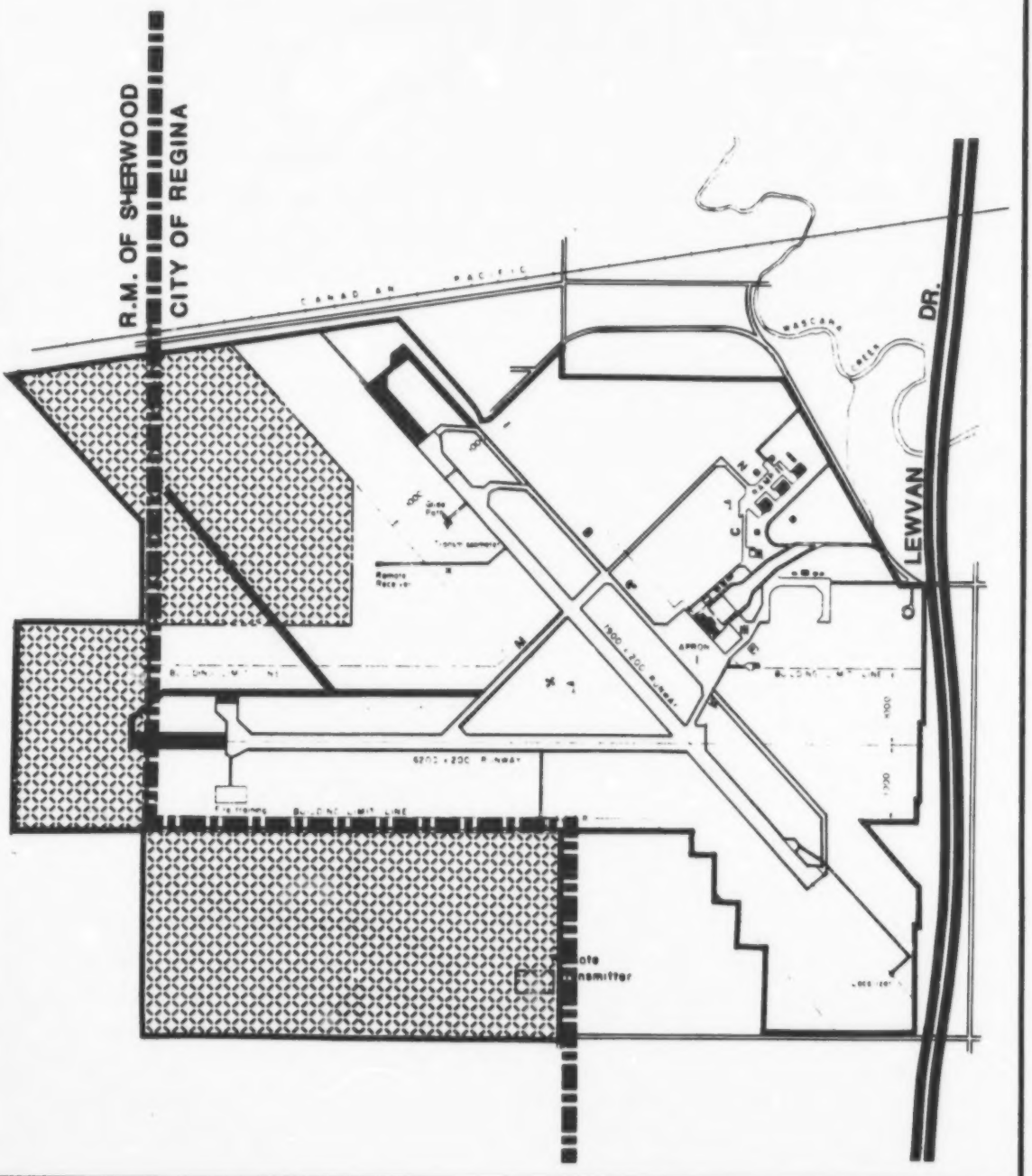
6.3.2 Protection of Airport Operations

The restrictions on nearby development imposed by obstacle limitation surfaces, bird hazards, electronic interference, aircraft noise exposure and visibility restrictions should be incorporated in future planning activities such as Development Plan policies, zoning regulations and site planning.

6.3.3 Road Realignments

Acquisition of land required for runway expansions and the new radar facilities will require several road closures and realignments as shown on Map 38. New roads should reflect the long term development prospects for the area.

MAP 39 AIRPORT LANDS ANNEXATION



6.3.4 Disposition of CPR Corridor

The abandoned CPR corridor is proposed to be used in part for a major east/west arterial roadway, which should not conflict with electronic navigation aids due to its alignment. The remainder of the corridor at the end of the runway 12 is intended for uses similar to those on abutting properties, i.e. agricultural uses. Transport Canada should consider purchasing this property if this agricultural activity will conflict with the proposal localizer.

6.3.5 Annexation of Airport Lands

Lands required for airport expansion (see Map 39) should be annexed to the City as they are developed, consistent with the existing airport property.

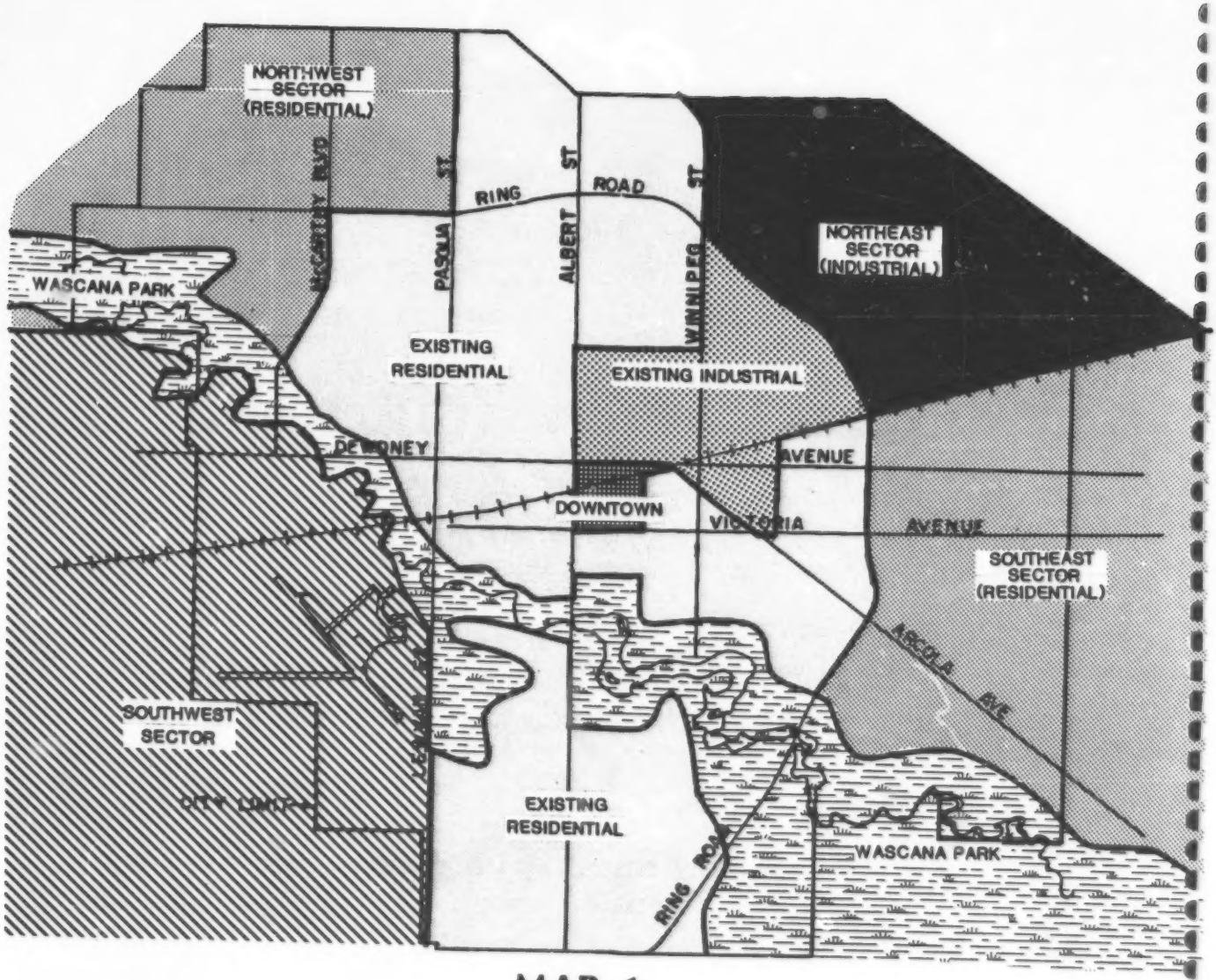
6.3.6 New Airport Access Road

In view of the potential light industrial development in Westridge, consideration may be given to a road from that site linking directly into the airport property. Similar direct access could be considered from potential industrial areas to the northwest of the airport lands, possibly connecting into Empress Road.

APPENDICES

A. SOUTHWEST SECTOR FEASIBILITY STUDY TERMS OF REFERENCE (APPROVED BY COUNCIL, SEPTEMBER 16, 1985)

B. AIRPORT ELECTRONIC AIDS PROTECTION - EXCERPTS FROM THE AIRPORT MASTER PLAN (DRAFT)


NORTHWEST SECTOR (RESIDENTIAL)
RING ROAD
ALBERT ST
WINNIPEG ST
NORTHEAST SECTOR (INDUSTRIAL)
WASCANA PARK
EXISTING RESIDENTIAL
EXISTING INDUSTRIAL
DOWNTOWN
AVENUE
SOUTHEAST SECTOR (RESIDENTIAL)
SOUTHWEST SECTOR
EXISTING RESIDENTIAL
WASCANA PARK
RING ROAD

MAP 1

APPENDIX 'A'

SOUTHWEST SECTOR FEASIBILITY STUDY

TERMS OF REFERENCE

1.0 PURPOSE

The purpose of this study is to determine, in light of the anticipated release this summer of Transport Canada's Airport and Environs Study:

a) The physical potential for future development of the southwest sector;

b) The forms of development, if any, which can be accommodated;

c) The impact of development in the Southwest Sector on the overall growth management of the City; and,

d) The short term development options, if any, which are compatible with the long term development potential of the area.

2.0 STUDY AREA

For the purposes of this study, the Southwest Sector is defined as that portion of the City of Regina lying south of Wascana Creek and west of Pasqua Street, other lands east of Pasqua Street lying within the currently applicable 40 NEF contour, and that portion of the R.M. of Sherwood lying within Township 17, Range 20, all of which are as shown on Map 1.

3.0 TASKS

The following tasks will be undertaken:

3.1 Identify the physical capacity for development:

a) evaluate the implication of Transport Canada's Airport and Environs Study, when available, with regard to the limits which airport noise places on development in the sector;

b) identify other potential constraints to development such as pipeline or rail right of ways, sewage lagoons, watercourses, marshlands, and existing developments or development commitments;

c) estimate the general costs of alternative servicing schemes for water, sewer, roads, storm drainage, telephone and gas; and,

d) identify potential development areas and determine general servicing costs for each area.

3.2 Outline potential development scenarios:

a) evaluate the suitability of lands in the sector for residential, industrial, agricultural and recreational uses taking into account:

i) the physical capacity of the land for development
ii) the interrelationship with abutting land uses
iii) expected traffic and servicing impacts; and,

b) prepare alternative development scenarios which describe:

i) the general uses of land
ii) basic servicing options
iii) possible phasing sequence

3.3 Evaluate the impact of development on the overall growth management of the city:

The above tasks serve to determine whether development is feasible. It is equally necessary to determine whether development is desirable in the context of the overall growth management of the city. Consideration should be given to such factors as whether development in the Sector will achieve a more compact urban form which has benefits in terms of decreased travel distances and shorter servicing areas vis-a-vis continued growth in the southeast and northwest sectors (beyond the railway corridor). A comprehensive evaluation can be made once the development potential has been identified, and should consist of the following:

a) evaluation of very long term growth patterns, urban form and servicing options for the city;

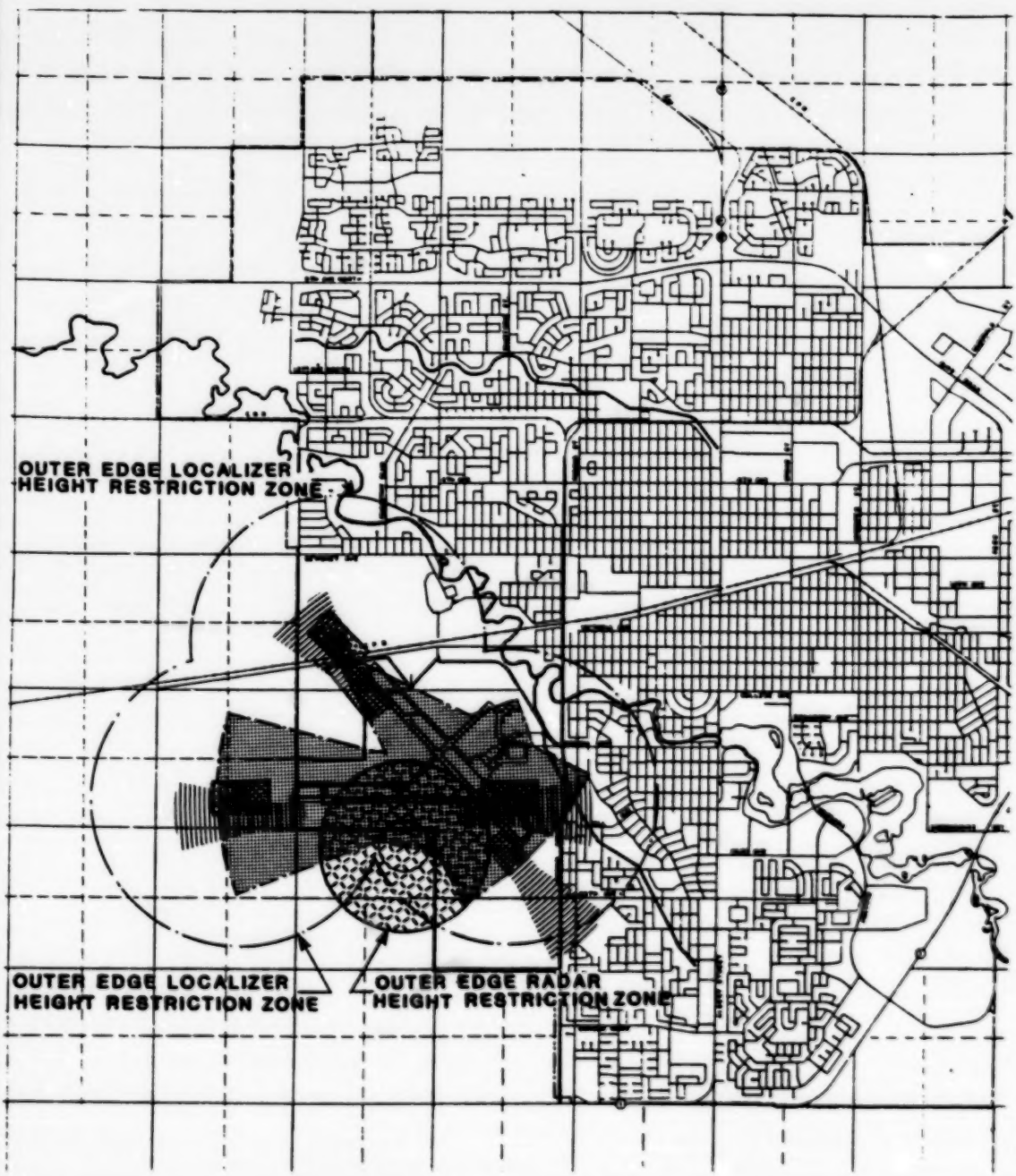
b) analysis of the comparative servicing costs and possible phasing of development of the southwest sector;

c) evaluation of the impacts on:

   i) transportation networks
   ii) sewer and water service
   iii) northwest and southeast sector timing
   iv) Ross Industrial Park (if appropriate)
   v) the downtown
   vi) long term airport operations and location; and,

d) identification of the short term development options which may be consistent with the long term development potential for the area.

ELECTRONIC ZONING


OUTER EDGE LOCALIZER HEIGHT RESTRICTION ZONE
OUTER EDGE LOCALIZER HEIGHT RESTRICTION ZONE
OUTER EDGE RADAR HEIGHT RESTRICTION ZONE

LOCALIZER PROTECTION NO OBJECTS HIGHER THAN 1.2m

RADAR PROTECTION NO BUILDINGS, METALIC FENCES OR OTHER MANMADE STRUCTURES

LOCALIZER PROTECTION NO OBJECTS HIGHER THAN 2.5m ; NO METALLIC OBJECTS HIGHER THAN 1.2m

GLIDE PATH PROTECTION NO METALLIC FENCES, POWER LINES, TELEPHONE LINES, BUILDINGS, ROADS, OR RAILROADS

LOCALIZER HEIGHT RESTRICTION ZONE (30° ARCS FROM FUTURE LOCALIZER SITES)

N

SCALE 1:65,000

APPENDIX B
AIRPORT ELECTRONIC AIDS PROTECTION

Use of airport electronic telecommunications and navigation equipment must meet standards required by the Facility Engineering and Systems Development Branch of Transport Canada. Controls for protection against electronic interference may affect land use, structure location, size, height and building material. Consultation is mandatory where development proposals contravene the restrictions. However, application of the standards may be varied in circumstances where the risk of interference is demonstrably insignificant. The restrictions associated with existing and possible future on-site electronic installations are illustrated in Figure 5.5.6A and 5.5.6B.

Certain electronic equipment is located on remote sites. In all such cases, Transport Canada has secured either property or protective easement agreements to meet the necessary electronic zoning requirements.

Instrument Landing Systems:

Only Runway 12 is currently provided with an Instrument Landing System (ILS) approach. For planning purposes, however, all four major runway approaches (existing facilities and recommended extensions) are assumed to require zoning protection for ILS installation. ILS approaches will be phased out and replaced with Microwave Landing Systems (MLS) and Precision Distance Measuring Equipment (P-DME). Pending sufficient operating experience, future zoning requirements may be altered. However, current policy is to maintain ILS zoning requirements as an interim measure. Onsite ILS installations are limited to the Localizer and Glide Path Transmitters.

Localizers are typically 335m outward from the stop end of the runway, on the extended centre line (the existing Runway 12 localizer is 462m from threshold). These required a 60m radius obstacle free area (subject to a maximum height of 1.2m); a rectangular restricted height

area (no metallic objects over 1.2m; no non-metallic objects over 2.5m) centred on the localizer and extending 610m (along the runway centreline) by 365m (perpendicular to centreline); and a 6,100m radius restricted height area originating at the localizer. A 36 degree arc of this latter area, centred in the direction of the runway, is subject to a 1.6 degree height restriction plane for metal-walled structured and a 2.4 degree height restriction plane for non-metallic structures (including trees). The remaining 324 degree arc is subject to the same restrictions reduced by a factor of 2x.

The ILS Glide Path transmitter installation is a variable 320m in from the threshold for a 3.0 degree glide path (323m southeast of the Runway 12 threshold in the case of Regina) and typically 122m from the runway centreline, usually on the opposite side from existing or planned taxiways. Restricted areas include a 30 degree arc centred on the extended runway centreline and extending 1500m in the approach direction, and two triangular areas extending in the direction of the approach from a 300m base, centred on the antenna and perpendicular to the runway, to intersect the 30 degree arc. Ideally, these areas should be free of metallic fences, power lines, telephone lines, buildings, roads or railroads.

New Very High Frequency (VHF) electronic markers will be required for any future ILS approaches. These would normally include a middle marker 1050m from threshold, an outer marker at 3.9 nautical miles from threshold and a back market 3.9 nautical miles from the runway stop end, all within 75m of the extended runway centreline. These are not illustrated. The site areas would be acquired by Transport Canada and sized to provide the necessary electronic protection.

Radar:

The radar installation at Regina is located near the site boundary, south of Runway 08-26. Past electronic interference problems have recently been corrected with the installation of non-metallic fencing in the area.

There are two restricted areas. The first, for protection of the primary surveillance radar, is a 1000m radius zone centred on the radar antenna and which is required to be free of buildings, metallic fences and other manmade objects (except related structures like the radar buildings). To protect the secondary surveillance radar, it is also required that any structures within this zone be constructed of non-metallic materials having a relatively low signal reflectivity. The second, extending from 1000m to 3000m radius, restricts the height of large structures (or natural growth) to no more than 1005 x distance from the antenna plus the height of the radar tower platform.

Replacement of the current radar installation is scheduled within the study period. The site will be approximately 300m west of the existing facility and 100m south of the airport boundary. Electronic zoning protection for the new installation will comprise a central zone of 300m radius and an outer zone extending from 300m to 1000m radius. There are preferrably to be no structures located within the inner zone; where permitted, structures should not exceed a height of 10m (i.e. 5m below the proposed radar antenna platform height of 15m). The outer zone will be subject to a height restriction sloping upwards from the 10m restriction at the 300m radius to 15m (the height of the radar antenna platform) at 1000m. Beyond the outer zone there is no height restriction specified, but it is preferable that structure height not subtend an angle of greater than 1.25 degrees from the antenna platform.

Communications Equipment:

The transmitter facilities at Regina are located on a remote site. However, the receiver installation is located near the western site boundary north of Runway 08-26. Metallic structures should not be located within a 300m radius of the facility. To prevent screening, structures within a 1.5km radius are subject to a maximum height plane sloping upwards at 1.2 degrees from the transmitter site.